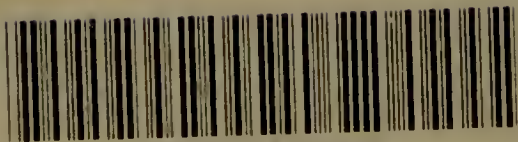


WILD ANIMALS OF
YESTERDAY & TO-DAY



BY
FRANK FINN., F.Z.S.



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To L. Medland, with kind regards from F. F. ...
April 9, 1914.

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WILD ANIMALS OF YESTERDAY
AND TO-DAY



OKAPIS AND PIGMY.

"The home of the okapi is in that portion of the great African forest mass . . . the Semliki River . . . Here Stanley got an inkling of its existence from the pigmy negroes."

WILD ANIMALS OF YESTERDAY & TO-DAY

BY

FRANK FINN, B.A.(OXON), F.Z.S.

AUTHOR OF "BIRDS OF THE COUNTRYSIDE,"
"WILD BEASTS OF THE WORLD,"
ETC., ETC.

*ILLUSTRATED IN COLOUR & BLACK & WHITE
BY C. E. SWAN*

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WILD ANIMALS

OF YESTERDAY AND TO-DAY

I

INTRODUCTION; BEASTS EXTINCT IN PREHISTORIC TIMES

WE are all familiar with

“The idiot who praises, in enthusiastic tone,
Every century but this, and every country but his own,”

and the favourite recreation of a near relative of this gentleman's is to heap praise and sympathy on every member of the class *mammalia* except the human species to which he himself belongs. According to this kind of zoological enthusiast the whole history of man has been a sort of “bad boy's diary”; not content with misbehaving in every possible way himself, he has spread unprovoked devastation among the good animals who were behaving in an exemplary way till he appeared on the scene, and occupying themselves solely with the preservation of what is fondly called the balance of nature. Man, in short, has been made to figure as an obnoxious addition to the programme, the only creature who has con-

sistently behaved as if he did not know that it was possible to have too much of a good thing—in this case his own species.

In reality, there has been nothing very exceptional about human behaviour in the zoological world; having the gift of an infinitely better brain than any other creature, man has used it in exactly the same way as other animals have used their special advantages—for his own benefit, without regard to the interests of his fellow-animals, and, unfortunately, in many cases without much regard to his own ultimate advantage, just as they have done.

We hear much about the destruction of nature's beautiful order by man's pernicious habit of clearing and cultivating the land, and thereby making it uninhabitable for the wild creatures; but the wild creatures carry on their own operations in exactly the same regardless manner, as they get the chance.

The beaver cuts down trees, thereby vastly inconveniencing the squirrels and opossums who want to live in them, and dams up a stream to make a pool, thereby turning land which lots of little creatures want to live upon, into water which drowns them out of house and home; like ourselves, he alters the face of the country to the best of his ability and to suit his own convenience, with a ruthless disregard for the balance of nature.

So does every creature, after its kind, and in

every country, even if man is not there, some other animal will have the upper hand, and will proceed to inconvenience, directly or indirectly, all the other creatures whose abilities are not equal to its own. The huge herds of springboks in South Africa, and the myriads of passenger pigeons in North America, fairly ate out whole districts, not knowing or caring what would happen to the other creatures which looked to the same food as they ate to support them, and their carnivorous foes in turn revelled on them to their hearts' content.

New Zealand has been cited as a happy land where all the birds lived a sort of idyllic life together, with no beasts to interfere with them, to say nothing of man, before the Maoris came and hunted down the moas; but overhead the hawks waited to harry the other birds, and on the ground the weka rails sucked eggs and stole chicks whenever they had the chance, while along the coasts the gulls robbed the oyster-catchers, and the skuas robbed the other sea-fowl, so that the peace was a very broken one, after all.

After living for eight years in India, where, in spite of a civilization many centuries more ancient than our own, the animal life has been less disturbed by man than that of any other country which is at all widely inhabited, I came to the conclusion that if man were not there the country would be run in the interests of the crows, these mischievous birds, by their

intelligence, power of combination, and propensity for minding everyone else's business as well as their own, having an altogether disproportionate voice in the affairs of the animal world ; they rob the sparrows' nest and tell tales about the tiger's doings with equal gusto—nothing is safe from them.

Yet all the dominant species of animals give with one hand where they take away with another, so to speak ; the beaver's pond is as big a convenience to the musk-rat and the mink as it is a nuisance to the squirrel and the wood-mouse ; the beasts and birds of prey which had dined to repletion on springbok and passenger pigeon could afford to let their ordinary prey alone for a time ; the weka rail now and then himself made a meal for the hawk, and the crows make things hot for the prowling civet and point out his food to the vulture.

Man himself, the greatest foe of some of the lower animals, is the best friend of others ; when he makes a country uninhabitable for some, he converts it into an ideal residence for another set. Some he tames, and these he carries with him in his wanderings about the world ; others he distributes without taming them, like the red-deer and the sparrow ; and yet a third set quarter themselves on him against his will, like the rat and mouse. Also, his war against the creatures is not always to the death ; alone of all, he can and often

does stay his hand in time, and preserve the remnant of a persecuted race, which no other creature has the wit to do.

It is my purpose to make this book a sort of popular zoological stock-taking, as far as the higher land animals are concerned ; to pass in review the animals which have been exterminated completely since the dawn of history ; to say something about our fight with the other animals, and their more or less inevitable defeat and expulsion ; and also, on the other hand, to give humanity due credit for its action as preserver and distributor, by domestication or otherwise, of certain creatures ; and finally to add something about the prospects of the future—the possibilities of the occurrence of new animals and our policy towards the existing kinds, whose fate is now in our hands.

Man has made many grievous mistakes in the past, but these need never be repeated ; and it is only to him that we can look for a regulation of the zoological world ; for

“ In the universe there is nothing great but man ;
In man there is nothing great but mind.”

Waste and cruelty do not pay ; and in the abolition of waste and cruelty, which are part of nature's methods, we shall find our true vocation as rulers of the animals our kindred.

Before saying anything about the creatures which have become extinct in historical times,

it will be necessary to consider briefly the most striking of those which were once contemporary with man, but disappeared from the earth long before history or tradition began. There are very few of such extinct animals altogether, for by the time that human remains appear on the geological scene, the animals existing had become restricted to types which we know now, and even the species were for the most part as modern as we are, though their range was often different, being much wider than in modern times. Thus, the cave-lion and cave-hyæna were simply the ancestors of the lion and spotted hyæna of the present day, which animals lived in this country and in Europe generally.

But one or two of the beasts of this age, the Pleistocene of geology, have attained a great celebrity by reason of the abundance and comparatively perfect preservation of their remains, which in some cases point to an extinction which is quite recent geologically speaking.

The most celebrated of these is the hairy elephant or Mammoth, which man knew so well that even sketches of it remain; in the cave of La Madeline in the South of France has been found a drawing of the beast executed by some ancient artist on a piece of its own ivory. In other French caverns drawings of the animal appear on the walls, along with some of the wild horse and of the rein-

deer, which then ranged much farther to the south than it does to-day.

These drawings alone would give the lie to the boastful words of grim old Time in Hood's beautiful *Plea of the Midsummer Fairies*—

“Great Mammoth now hath passed away
And none but I may know what hide he wore”;

but there is far better evidence for the condition of the Mammoth's outside; not only have enormous quantities of the bones and teeth been found, so that for many centuries the fossil tusks have been an article of commerce, and still figure in that capacity, but entire bodies of the beasts, preserved in the frozen soil of Siberia, have come to light during the last century and a half. These show what the drawings indicated, that the Mammoth had a coat of hair. This was of various shades of brown, and varied also in length and quality; there was an undercoat of woolly texture and light colour, as usual in northern animals, a coarse, bristly outside coat, and a mane on the fore-quarters, which on the chin and breast reached half a yard in length.

The tusks were far longer than in existing elephants, and were strongly curved outwards and upwards, so much so that they could have hardly been of any use for fighting in mature animals; the ears, on the other hand, were smaller than in living elephants. Although, however, the Mammoth's name has become

proverbial for anything of gigantic size, the beast, as a matter of fact, was apparently not much larger than the biggest modern elephants ; and its relationship to the Indian elephant was very close. In this connection it is interesting to notice that the young Indian elephant has a coat of hair, though this is not long and thick, as has been absurdly stated, but so scanty that the skin can be seen through it ; it is, in fact, very like the coat of a well-bred tame pig in quantity.

The first of these mummied Mammoths was found in the Lena delta in 1799, and the skeleton and a little of the hide are still in the St. Petersburg Museum ; and one was discovered as recently as 1901, of which both skin and skeleton were preserved in the same museum, though much of the coat is lost. This beast had evidently died by an accident, as was shown by a broken hip and foreleg, by the extravasated blood in the chest, and even by grass still in the mouth.

The flesh of these " cold-storage " Mammoths was so well preserved that it was eaten, not only by bears, wolves, and dogs, but by the local natives themselves. It has thus come to pass that we know more about the Mammoth in modern times than about any other prehistoric creature, although the wildest stories used to be circulated about it. The wild Mongol tribes and their civilized relatives of China considered it a burrowing creature which

died when its excavations brought it into daylight, and Europeans in classical and mediæval times first referred its remains to those of historical or mythical giants, and afterwards, when it became obvious that the giants were quadrupeds, and elephants at that, racked their brains to account for the presence of such creatures so far away from where they were known to exist. Not until Cuvier's time was it recognized that the Mammoth was a distinct kind of elephant, whose true home had been Europe and the northern parts of Asia, where the forests furnished it with much the same sort of food as is consumed by modern elephants to-day. In America the Mammoth also existed, but is not known to have been contemporary with man, though the Mastodon, an American elephant with molar teeth of a more ordinary and primitive type than the complicated grinders of the Mammoth and modern elephants, appears to have been so.

Along with the Mammoth there inhabited the northern parts of the world a hairy species of rhinoceros, but this, like the modern rhinoceroses in zoological gardens and in the wilds alike, has never attracted popular notice like its contemporary the elephant. Its horns, however, had a wide reputation in the Middle Ages as gryphons' claws.

The so-called "Irish Elk" is rather unfortunate in its name, for it was not by any

means confined to Ireland, and except for its size and the flat or "palmated" structure of its antlers had little in common with the genuine elk or moose, which fortunately still exists to-day.

The real relationships of *Cervus megaceros*, to give the big extinct deer its scientific title, are with the modern fallow-deer of our parks; it had the ordinary graceful shape of deer, not the awkward form of the big-headed, short-necked moose, and the horns were exceedingly like those of a fallow buck on a large scale, and possessed a brow tine, which is not found in the horns of the elk.

Their span, in what Mr. J. G. Millais regards as the finest existing specimen, which came from Loch Gur, in Ireland, and belongs to the Duke of Westminster, is nine feet three inches, with a breadth of two feet across the "palms," and twelve points on one side and ten on the other. Greater breadth of span has been recorded, but Mr. Millais considers that genuine specimens over ten feet across are very rare, and that these very big heads are liable to be "faked" with artificially shaped and coloured additions of wood.

In any case, it will be seen that the horns were of enormous size even in proportion to the beast itself, although its shoulder height was a couple of yards; this would make the top-most points of the antlers reach about twelve feet above the ground as the animal stood,

higher than the back of any elephant, and only a yard lower than the head of some cow giraffes. The true elk would also have looked insignificant beside this extinct deer, for though it equals it in shoulder height, its short neck deprives it of majesty of carriage, and its span of antlers is barely half that of the giant fallow-deer's, while they are far less graceful in form.

What the hide of this great deer was like is unknown, but it is not likely that it was spotted and smooth like the fallow-deer's, as all the largest deer at present existing are self-coloured and inclined to shagginess about the neck, at any rate in the males.

But it must have been far the most grand and beautiful animal which has ever existed, since no other creature combines gracefulness and size in the same way; while its strength must have been equal to resisting the attacks of any creature in fair fight, for the ordinary red stag has been known to beat off a tiger enclosed in an arena with him, and the moose can kill a wolf with a single blow of his hoof.

The evidence that man hunted and killed this grandest of all big game rests on the discovery of bones bearing evidence of human handiwork; for instance, Mr. Millais has a skull showing a cut evidently made by a stone axe, and Mr. Ussher has discovered bones split for marrow among human remains in a cave

in Waterford. There is also the case of a corpse found in Irish peat that was wrapped in clothes supposed to be of the giant deer's hide, though no relic is in evidence to prove this ; but there is no doubt that in Ireland, where the beast was commonest, it survived till the human period.

Unlike most types of animals which are found both here and abroad, the giant deer attained a finer development in our country than elsewhere. It was especially common in Ireland, but did not range farther north in Great Britain than Perthshire, and of the English specimens the preservation is not good, owing to the hard ground in which they are found. Those dug up from the Irish bogs are the best. They are sometimes as little as seven feet below the surface of the peat ; but the majority are found in the shell-marl underlying this vegetable layer. Several perfect specimens have been found, and skulls and horns are quite common. The Continental race or variety had a wide range, extending through Europe to Siberia.

There has been a suggestion made that the great Irish deer was domesticated by man, but however this may be, there seems to be little doubt that such domestication occurred in the case of the beast now to be noticed.

The strangest and most remarkable of the extinct animals of South America were the

gigantic ground-sloths, of which the *Megatherium* was the best known. These beasts combined the structure of ant-eater and sloth, having molar teeth like sloths, while the ant-eaters are toothless, but, on the other hand, having well-developed tails, not rudiments like those of the sloths. Their feet also were formed in such a manner as to enable them to walk like ant-eaters, the sloths being only able to crawl when on the ground, their proper position being hanging upside down on the branches, where they are comparatively active. The ground-sloths are supposed to have been vegetarians like their climbing relatives of the present day, but instead of going up trees for the leaves, they sat on the ground and pulled down the boughs with their powerful fore-claws, or even dragged down small trees bodily, not an impossible feat for a beast as big as a rhinoceros.

Dr. Moreno, who had always believed that man was contemporary with these monsters, having discovered human remains in similar condition of preservation to theirs, found in 1897, at Consuelo Cove in Last Hope Inlet in Patagonia, a piece of dried skin which contained small encrusted bones similar to those known to belong to the fossil ground-sloth *Mylodon*. This had been found in a cave in the neighbouring Cordilleras, and it was still covered with thick hair of a light yellowish brown colour, and altogether did not seem to be remarkably

ancient ; at any rate, the owner may well have been contemporary with man, for in 1877 Dr. Moreno had found in another cave, under similar conditions, a mummified human body, still showing hair on the head. He regarded the beast, however, as long since extinct.

The piece of skin in question was three years later described before our Zoological Society by Dr. Smith Woodward, who also commented on the fresh appearance of the specimen, and later in the same year he was able to communicate more details about this extinct animal, Dr. Rudolph Hanthal, geologist of the La Plata Museum, having made further researches in the original cavern, which resulted in some very interesting discoveries. Not only was another piece of skin found—though this was not in such good condition as the first, and had lost most of the hair—but bones belonging to three different specimens of what was undoubtedly a ground-sloth turned up as well. These also looked remarkably fresh, and even had shrivelled remnants of skin and gristle attached to them.

Moreover, there were found plenty of droppings of the animals, and an accumulation of cut hay, suggesting that the beasts not only lived in human times, but were actually kept and artificially fed by men. Human remains were indeed represented by a shoulder-blade and two bone awls, and the skull of one of the big beasts exhibited such injuries that there

was "no doubt that the animal was killed and cut in pieces by man." The cave was, in fact, a stable in which these queer cattle were stalled by some primitive race, and examination of the droppings showed that the food had consisted of grass.

An expedition was promptly sent out to Patagonia, financed by Mr. C. A. Pearson, and led by Mr. Hesketh Prichard, to try to find if these beasts still existed anywhere, but no results were obtained, thus confirming the view that had been expressed by Dr. Moreno that they had long since disappeared. At the same time, as Mr. Prichard says in his book *Through the Heart of Patagonia*, it is just possible that the Mylodon may exist in some remote part of the forests of the Patagonian Andes, hundreds of square miles of which are still unexplored; though in his researches into the forests he found that there was a remarkable lack of animal life, even of the smaller kinds, which does not look promising for the ultimate discovery of anything as big and sensational as a ground-sloth, for, as Mr. Prichard says, where there are large animals, there are sure to be plenty of smaller ones as well.

II

BEASTS EXTINCT IN HISTORIC TIMES

WE now come to the animals which are definitely known to have disappeared during times of which we have historical knowledge ; these are, as it will be seen, but few in number, and may be treated in pretty full detail.

Among the animals that have become extinct during the historic period, the Arctic sea-cow, the *Rhytina* of naturalists, is certainly that of most scientific interest, as well as the one which would have been of the greatest use to humanity if we had allowed it to survive.

It was a member of the small group of beasts known as *Sirenia*, still represented by the few species of manatees and dugongs, and, of course, shared their general characters ; that is to say, it was a water animal—never coming ashore of its own accord—without hind limbs, and with a generally fish-like shape of body and a broad, flat, horizontal fin at the end of the tail. It was, however, like the other sirenians, not so fish-like in shape as the cetaceans or whale tribe—to which the sirenians are not related—and further approached land mammals in having plenty of hair about the mouth, though, as

in the rest of the group, there was none on the body. It was discovered through the shipwreck, in 1741, of Bering's exploring party on the Commander Islands, the particular island being what was afterwards called Bering Island, after the leader of the expedition, the only other island of the group being Copper Island, which is smaller.

The shipwrecked party had to stay on the island for ten months, and G. W. Steller, the surgeon of the party, who was an excellent observer, has left a most valuable description of the appearance, habits, and anatomy of the beast, in a paper written in Latin and published in his paper on Sea Beasts, in the *Proceedings of the Academy of Petropaulovsk*, volume II, dated 1749.

These observations reflect the greatest credit on Steller, for those of the anatomy of the beast were carried on under the greatest difficulties. The subject was far too big to be handled comfortably by one man, and the party was so preoccupied in making a vessel to get away on, that, as he tells us, he could only get help by hiring the men for an hour at the end of the day at his own expense, and then they proved very butcherly anatomists, while he could not afford to criticize their methods for fear of losing what slight assistance they were able to give him. Moreover, he was badly worried in this work, so he tells us, not only by the surf and the miseries of the in-

clement climate, but by packs of "most rascally" Arctic foxes, who not only mangled the carcass he was dissecting, but bolted off with his paper, books, and ink. Altogether the task was the very opposite of that of the modern club-fed anatomist, at home in his well-appointed laboratory with proper assistance.

The sea-cow was a huge brute, reaching eight thousand pounds in weight, and measuring as much as twenty-four feet eight inches in length, with a girth round the thickest part at the middle of the body of twenty feet. Its head and mouth were small for the size of the body, and the tail fin, which was broad and forked as in the dugong, not rounded as in the manatee, was six and a half feet across.

The body was covered by a very thick hide—no less than an inch thick; it looked more like the bark of an aged oak than the skin of a beast, being hairless, rough, rugged, and pimpled, and it was so hard as hardly to be cut by an axe or pierced by a harpoon. The back was comparatively smooth, however, only marked by transverse wrinkles, but the sides were particularly rough and pimply, and bore many raised, saucer-shaped excrescences like fungi, especially about the head. This crust-like outer skin was made up of small tubules packed together and resting on the true skin. These tubules gave off a thin, watery mucus, especially on the flanks and head, which re-



CESMAN.

DISSECTION OF STELLER'S SEA-COW.

mained wet when the animal had been lying some hours on shore, while the back got dry. It never, by the way, went on shore of its own accord, like the manatee. The thick cuticle was evidently a protection against injury and changes of temperature, for Steller noticed that in the carcasses cast up on shore, which were especially to be found in winter, that the grazing off of this outer skin against the rocks had evidently been the cause of the animal's death.

The colour of the hide, while the beast was wet, was blackish brown like the skin of a smoked ham, but looked all black when dry; the upper lip was white and clad with white bristles. Some specimens had rather large spots and streaks of white, the colour reaching the true skin as well as appearing on the surface.

The roughest part of the hide, about the head and chest, was badly infested with insects, which often bored through the epidermis down to the true skin, and caused the growth of warts.

The small mouth was overhung by a large, thick, semicircular upper lip, fourteen inches broad; the bristles on it were four or five inches long. The under lip was seven inches broad, and heart-shaped, without bristles; but along the junction of the closed jaws was a dense growth of bristles, serving to keep the food in the mouth while any water taken in

flowed out. These bristles were as thick as pigeons' quills.

Both lips were divided into an outer and inner portion, the inner part being rough like a calf's tongue; with these lips, which were very movable, the animal grazed like a horse or ox, tearing away the seaweeds, the bristles on the lips serving instead of teeth to give them a hold. They were able to shear off the softer parts of the seaweeds from the stalks as neatly as if this were done with a knife, the lips being much stronger and harder than those of land animals, so much so that neither boiling nor any other treatment would make them fit for human food.

There were no true teeth in the jaws, and the food was chewed by means of two strong white bony masses, or fused teeth, one situated on the palate and the other on the lower jaw. Their structure was full of canals like a sponge, and their surfaces ridged like millstones, the ridges of either side meeting in points in the middle, according to the illustration given in Steller's work; they thus were well fitted to supply the place of the absent grinders.

The tongue was like an ox-tongue, and a foot long, but it lay so far back in the jaws, so as not to interfere with the action of the curious false grinders, that it might easily have seemed to be wanting altogether, and could not be pulled far forward.

The nostrils were on the top of the head, and

were two inches wide ; the eyes were black, only as large as a sheep's, set exactly between the end of the snout and the ear-opening, and had no eyelashes or eyelids, only appearing through a round hole in the skin which could be closed altogether, and was only half an inch across. The ear-hole was also so small as only to admit anything as thick as a fowl's quill.

Although the neck was very short, only half the length of the head, it was noticeably narrower than the head at the back, and had some flexibility in the living animal, although in the dead carcase it looked stiff.

The body bulged very much in the middle, and narrowed suddenly towards the neck and tail, and the belly looked like an inflated bag. The tail fin was hard and stiff, of a substance like whalebone, and jagged at its end.

But the great peculiarity that distinguished the beast from both land and amphibious animals, as Steller says, was the formation of its fore-feet—the hind ones being absent as in its allies. These limbs were twenty-six and a half inches long, and had no signs of toes or nails, ending short at the bones of the wrist, which were covered with tendons, ligaments, and skin, like the stump of an amputated human limb ; only the outer skin was there much thicker, harder, and drier, so that the ends of the feet were rather like the hoofs of a horse, only more pointed, and so more suited for digging. These hoofs were smooth

and rounded above, flat and slightly hollowed below, where they were thickly covered with half-inch bristles like a brush.

In one specimen Steller found this hoof-like end of the foot cloven as in an ox, but he thought this was simply an accidental malformation, as the division did not go deeper than the surface skin, which was liable to split.

With those curious fore-feet the sea-cow swam, crawled along the bottom, held on to the slippery rocks, tore the seaweed and sea-grass from the rocks like a horse pawing with his hoofs, resisted violently when harpooned, and caressed its mate. Steller says nothing about its embracing its young with them, though it had its nipples on the breast like the manatee, which nurses its young with its fore-paws ; but in this beast the feet end in long flexible paddles, containing the usual bones of the toes.

Steller's account of the habits of the sea-cows is very full and clear, and I am here translating almost all of it. He says they liked sandy shallows, and especially sought the mouths of streams, attracted by the influx of the fresh water. They were always in herds, the adult animals being careful to surround the immature specimens and calves in the flanks and rear, keeping them in the middle of the flock, and thus taking them to feed ; at high tide they came so close inshore that he could not only

reach them with a stick or spar, but even stroke their backs. If more roughly treated all they did was to move farther out, but they soon forgot the injury and came back again.

The families, consisting of a male, adult female, and their small calf, generally kept together; he thought that they lived in pairs and had but one young at a birth—at any rate, he never saw the female attended by more than a single calf. They appeared usually to have their young in autumn, after what appeared to be more than a year's gestation.

They were very greedy animals, continually on the feed, and eating so greedily that their heads were constantly under water; they cared so little about their safety that one could go about among them either in a boat or without one, and choose at one's ease any of the flock to harpoon. All they did when grazing was, every four or five minutes to raise their nostrils out of water and expel the air from their lungs with a little jet of water and a snort like a horse; but while feeding they slowly moved one foot after another, and so half swam gently, and half walked, as it were, like oxen or sheep feeding. Half of their bodies, the back and sides to wit, were always above water, and while they grazed the gulls used to perch on their backs, and regale themselves on the parasites which harboured in the skin, just as crows feed on those of pigs and sheep.

They did not feed promiscuously on all sorts

of seaweed, but especially on four kinds, one with cabbage-like leaves, a club-shaped kind, one like an ancient Roman shield, and a very long one with undulated margin ; and where they had been feeding for one day great heaps of stalks and roots could be seen thrown up by the sea.

When they were full-fed some of them took a nap, floating on their backs, but they drew off farther from the shore to avoid being stranded by the ebbing tide. In winter they were often drowned by the floating ice, or perished by being caught in the surf and dashed against the rocks ; at this season they got so lean that not only was their backbone visible, but their ribs also. In spring they mated, after a great deal of sportive chasing.

They were caught with a huge harpoon, like the head of the fluke of an anchor, to an iron ring at the other end of which a very long and strong line was fastened. A strong man took this harpoon, and got into a boat with four or five others. With three or four rowing and one steering they rapidly approached the herd ; the harpooner stood in the bows holding the harpoon and launched it as soon as ever the boat was near enough, upon which thirty men on shore took the other end of the line and held the animal, which they then drew shorewards, not without great difficulty on account of its violent resistance. Those in the boat meanwhile kept their position with another rope (pre-

sumably the other end of the line, which was fastened to the harpoon by its middle) and wore out the beast by frequent strokes till it was killed by stabbing with dirks, knives, and other weapons, and drawn on shore.

Some cut huge pieces from the beast while still alive, its only protest being to move its tail vigorously and to struggle so violently with its paws that great pieces of the skin often flew off, while it breathed hard and groaned, as it were, and the blood spouted on high like a fountain from its wounded back, whenever the head came above water and a fresh influx of air into the lungs drove the blood out.

The old and very large animals were more easily caught than the calves, because these were much more vigorous in their movements, and even if the harpoon did not break, the skin tore and thus set them free, which happened more than once.

As soon as any one of the beasts was harpooned and began to struggle, its comrades in the herd immediately came up and tried to help the captive. Some, with this idea, tried to capsize the boat with their backs, others bore on the line and strove to break it, or struggled by beating it with their tails to drag the harpoon from the back of the wounded animal, in which attempt they sometimes succeeded.

A remarkable proof of their intelligence and affection for their mates was that a male, after he had vainly tried with all his strength

to free his female, which had been harpooned and was being dragged ashore, and had for this suffered many strokes from the hunters, nevertheless followed to the shore, and several times rushed suddenly like an arrow to her, dead though she then was. On the next day when they came at dawn to cut up the meat and carry it home, they again found the male lying near his mate, which Steller also saw on the third day, when he had come by himself for the purpose only of studying the intestines.

The sea-cow was mute; the only sound it emitted was its hard breathing and the sighs it uttered, as it were, when wounded. Steller could not say what powers of sight and hearing it possessed, but it could not see or hear much, as it generally kept its head under water, so that it seemed to neglect the use of these faculties.

He considers, reasonably enough, that the remarkable tameness of these animals, as compared with the wariness ascribed by our countryman Dampier to the American manatee, was due to the lack of human disturbance, just as otters, seals, and Arctic foxes in this desert island of Bering had, until his party's arrival, never been disturbed, and were killed without any trouble, but soon became as wild as the American manatee.

The fat under the skin of the sea-cow was in most places a palm's breadth in thickness, firm and white, but if exposed to the sun turning

to the yellow tint of May butter. Its smell and flavour were so good that the fat of no other sea beast could compare with it; indeed, it was far better than that of land animals. Besides, it could be kept for a long time, even in the hottest weather, without getting rancid or smelling badly, while when rendered out it was so sweet and savoury that Steller's people never felt the want of butter, and it could be used for the same purposes as that substance. Its flavour was much like that of sweet almond oil, and it burnt with a clear, inodorous, and smokeless flame.

Nor was its medicinal use to be despised; it was a mild laxative, and could be drunk without provoking nausea or taking away the appetite. Here, of course, one must allow something for the cold climate and the taste of Russians for oil, but it is evident that the sea-cow's grease was of very superior quality. The fat of the tail was of harder consistency and more delicate when tried out.

The meat was coarser-fibred than beef, and redder than that of land animals; and was remarkable in that it could be kept a long time in the open air in the hottest weather without smelling bad, in spite of the attacks of numerous maggots.

Steller thought that this was due to the fact that the animal fed on seaweed which contained some sulphur and much sea-salt and nitre, which hindered putrefaction, as salt does

when sprinkled on meat, the more so as this salt was more intimately mixed with the flesh in conjunction with the sulphur.

While this sea-cow meat took a lot of cooking, when done it was very good, and not easily to be distinguished from beef. The fat of the calves was hard to tell from fresh lard, but their flesh was just like veal; it soon became tender on boiling, and, like that of a young pig, swelled to double its bulk during the process.

The sinewy blubber about the head and tail could hardly be softened by boiling; but the meat of those parts was much better than that of the belly, chine, and flanks; the common idea that it could not be salted was incorrect, for it took salt so well that it became just like salt beef and was very good eating.

The internal organs—heart, liver, and kidneys—were too hard, and Steller's party set no store by them, as they had plenty of the meat. There were so many of these animals about this one island that the natives of Kamtchatka could live on them entirely.

Man, indeed, seems to have been the sea-cow's only animal enemy, except the lice which infested it, which Steller describes as transparent white or yellowish insects, and some parasitic worms he found inside it; but from the care the old animals took, as he says, to surround the younger ones, it is very likely that, like most sea animals, they had to dread the attacks of the grampus or killer-whale. At

any rate, the storms of winter and the difficulty of obtaining food at that time seem to have been the chief check on their increase until the advent of civilized man ; though, from the fact that they were apparently only found about the shores of Bering and Copper Islands, it has been inferred that the sea-cows represented a species which had already seen its best days, or they would have had a more extended range.

This is the idea of Dr. L. Stejneger, who has discussed the extermination of the beast at length, and has himself spent a year and a half on Bering Island, and so knows the locality well. He concludes that when the island was discovered there could not have been more than fifteen hundred of the animals about it ; suitable feeding-places were not to be found everywhere, and he noted only about fifteen of such spots. As he says, if each of these were visited by a hundred sea-cows on the average, and those broken up into herds, they would give the impression of a large number.

In any case, it is abundantly evident that such a useful beast as the sea-cow was too good to live—among thoughtless humanity.

When Bering's expedition got back, others went out to hunt the fur-bearing animals, and lived on the meat of the sea-cows in the meantime. More than half of these parties wintered there, with the express intention of victualling with sea-cow beef for further journeys of two

years or more. No less than twenty vessels thus stopped there, each for six months, or usually longer, with crews of at least thirty men to be fed. Others wintered on Copper Island, and many no doubt were unrecorded. Thus these animals, whose number was from their nature and that of their surroundings strictly limited, as they increased slowly and had a hard time of it in winter, had to support a human population which, though temporary, was quite considerable under the circumstances.

Moreover, the provisioning, extensive as it was, was too often conducted in a very wasteful manner. Jakovleff, a Russian mining engineer, who went to prospect for copper on Copper Island in 1754, mentioned that the fur-hunters used to try to capture sea-cows for food single-handed, by sneaking up to animals lying close inshore and spearing them. The beasts, since caution was necessary, were evidently not quite so confiding now as they were in Steller's time, but the hunters often succeeded in striking them, though rarely in killing them outright. The natural result of this was that the stricken brute got out to sea, died there, and more often than not only drifted back when too far gone in putrefaction to be of any use, even if recovered at all. This of course entailed much unnecessary slaughter, and Jakovleff in the year following his expedition, petitioned the authorities in Kamtchatka to prohibit this method of hunting, to save the sea-cows on

Bering Island, as those on Copper Island had already gone. In fact, he could not winter on this place of his objective for that very reason.

Now Jakovleff said that one sea-cow would feed thirty-three men for a month, and as Dr. Stejneger calculates that 670 men wintered on Bering Island between 1743 and 1763, staying, on the average, ten months, this would mean, he concludes, the sacrifice of about 205 animals. Add to this 400 men who provisioned for long journeys and would need about 290 animals for an average time of twenty-four months, the total would be 495 beasts killed, without reckoning those which were lost as above described.

Dr. Stejneger reckons these as five times the number actually used, giving a total of 2475 killed up to 1763, nearly 1000 over what he estimated as the stock existing in Steller's time. Even if the number lost were overestimated to a considerable extent, this is quite a big enough figure to account for the fact that the sea-cows vanished from Bering Island, as they had done from Copper Island, before many more years had passed.

After 1763 little is heard of Bering Island, and Dr. Stejneger thinks that the small attention now paid to it points to the fact that the sea-cows and fur-bearing animals had been reduced below workable numbers. The foxes would not suffer so badly as the big, helpless brutes, and a party who went to hunt them in

1767 or 1768 seem to have killed the last sea-cow, for it was in the latter year that the last specimen was known to have been killed. At any rate, in a list of the animals given in 1772 by Dmitri Bragin, no sea-cows are mentioned, so that there can hardly have been any remaining. Thus in twenty-seven years from its very discovery this unfortunate beast was altogether exterminated.

Although the cloven-hoofed animals have been esteemed as food in all times, besides being useful providers of hides, and have therefore been more persecuted throughout the ages than any other beasts whatever, nevertheless, only one of them has become completely extinct in historical times, and that little more than a century ago.

This was the blue-buck of the Cape, a near relative of the handsome sable antelope and the powerful and savage roan antelope—indeed, it is the only other member of the genus *Hippotragus* to which they belong, and is scientifically known as *Hippotragus leucophaeus*. Five mounted specimens of it still exist in museums, but not in any such institutions in this country, although the British Museum has a pair of horns. These horns are of backwardly curved shape and surrounded by raised rings to within a short distance of the point, like those of the sable and roan antelopes.

The beast, however, is not so large as these, a



BLUE-BUCK AND BROWN HYÆNA.

Two animals, one of which is extinct, and the other threatened with extinction.

male specimen in the Paris Museum measuring forty-five inches at the withers, whereas the sable, which is smaller than the roan, stands over four feet ; his horns are twenty-one and a half inches long round the curve. The female, which also has horns, is smaller, a specimen of this sex in the Vienna Museum measuring forty inches in shoulder height. The horns are more like those of the roan antelope than those of the sable, which has them far longer proportionately than either of the others.

The colour is very different from that of the sable and roan, which in addition to the general tint indicated by their names have conspicuous white and black markings on the head ; the blue-buck is of a blue-grey tint nearly all over, shading into a whitish tint below, and only relieved by a brown patch on the forehead. The hair on the ridge of the neck is short and set forwards, but does not form a conspicuous mane as in the roan and sable antelopes.

The colour, from what Kolbe says in the abstract to be quoted directly, was much brighter in the living animal, which was no doubt a very handsome creature ; blue-grey is a colour which is very apt to fade in museum specimens. In any case it is a rare tint among wild beasts, and the only other antelopes which show it are the male nilghai of India and the brindled gnu. The little South African antelope which now has the same name of blue-buck is a very different creature, one of the duikers

(*Cephalolophus*); it is only about as big as a hare, with very short horns, and its colour is not by any means of a very bluish grey.

The first mention of the real original blue-buck is found in Kolbe's work *The Present State of the Cape of Good Hope*, volume II; I quote from Medley's quaint translation from the original German, published in London in 1731:—

“The Blew Goats are shap'd like the Tame, but are as large as an European Hart. Their Hair is very short and of a delicate Blew; but the colour fades, when they are kill'd, to a blewish grey. Their Beards, which are pretty long, add not a little to their Comliness.” This sounds strange, because the specimens of the blue-buck we know have shown hardly any throat-fringe, less than the roan and sable; but perhaps the beast grew a beard along the jaws in winter only, like the wild horse.

“Their hornes,” he goes on, “are not long in Proportion to those of other Goats, but they are very neat, and run very curiously up in Rings till within a little of the Point; which is streight and smooth. Their Legs are long, but not out of Proportion. Their Flesh is well tast'd, but rarely fat. And they are rarely kill'd but for the sake of their Skins; which are as good as those of Deer. Their Flesh is generally given to the Dogs. These Goats are only to be met with far up in the Country.”

Although the beast was evidently known in

the quite early days of Cape colonization, it was not till 1766 that it received a full scientific description, and that not from a Dutch naturalist, as one might have expected, but from Pallas, a Russian; this was published in his *Zoological Miscellanies*. He says he had seen many skins sent from the Cape.

Buffon, on the information of Allamand, mixed it up with the Siberian gazelle; in this way a figure of the real blue-buck got published under the name of tzeiran, which really applies to this Asiatic gazelle. The English naturalist Pennant mentions it in his *History of Quadrupeds*, published in 1781, as the blue antelope, giving the reference to Pallas's description, and describing it anew himself from a skin which he bought at Amsterdam, brought from the Cape of Good Hope. "I was informed," he says, "that they are found far up the country, north of that vast promontory, which I find confirmed by the late journies. It is called by the Dutch the *Blauwe Bock* or blue goat. This is the species, which, from the form of the horns and length of the hair, seems to connect the goat and antelope tribes."

He says the colour when alive was a fine blue, of a velvety appearance; when dead, it changed to a bluish grey, with a mixture of white, and that the hair was long, which directly contradicts Kolbe, as will be noted. There was probably some seasonal change that has never been properly recorded, so that the

animal would have had long hair in the winter and a short coat at other times.

The Swedish naturalist, Sparrman, who visited and travelled in South Africa, says, in his *Voyage to the Cape of Good Hope*, under the date January, 1776: "The *blaauw-bok* is also one of the large species of gazel, which probably are only to be found in the same district with the gazel just described [he means the gemsbuck, which he considered to be peculiar to the north-western part of Cape Colony]; excepting, perhaps, a single one, which may happen now and then by great chance to stray from these parts: for at Krakeet River I found they had preserved a skin of this animal. The colour of this creature when alive is said to resemble that of blue velvet, but when dead it is of a leaden colour."

He mentions the accounts of Buffon and Pennant (his own book having been published, at any rate the second edition, in 1786), and says that the animal had long white hair on the belly. The velvety appearance noticed by Sparrman and Pennant, which Levaillant—not a very good authority, however—says, as will be noticed in the quotation next to be given, he did not observe, was very possibly due to a gloss on the coat like the lilac gloss to be seen on the bontebok and blesbok, which gives them a tint quite different from that of any other beasts.

The French naturalist, Levaillant, visiting

the Cape in 1781, not only saw but shot a specimen a few days after leaving Cape Town at a place called "Tiger-hoek."

He says that his Hottentot hunter suddenly stopped him and told him that he saw a "Blawe-Bok [blue goat] lying down. I looked in the direction he indicated but could not see it. He asked me then to keep quiet and not move, assuring me that he would get me the beast. He at once proceeded to make a detour, crawling on his knees; I kept him in sight, but could not understand this performance, which was quite new to me. The beast got up and grazed quietly, without moving away from the spot. I took it at first for a white horse, for, from the spot I was in, it looked all white (up to then I had not met with this sort of gazelle); I was undeceived when I saw its horns. My Hottentot continued to crawl on his stomach; he got so close that it was the work of an instant to take his aim at the beast and fire; the gazelle dropped to the shot. I rushed to the spot and enjoyed the pleasure of studying at leisure the rarest and most beautiful of African gazelles." He further says that he preserved the skin carefully, and goes on to say: "During my residence in Africa, I only saw two of these gazelles and one other which was brought to the Governor, some years afterwards, during one of my visits to Cape Town. They came, like my specimen, from the valley of Soete-Melk, the only locality in which they

are found. I had been told that I should see some in the Great Namaqua country ; but in spite of all my inquiries and investigations I was disappointed in this hope. All the savages told me they did not know it. I had been told also that the female had horns as well as the male ; I can say nothing about this, because all three I had seen had been of the latter sex.

“ The principal colour of the animal is a light greyish blue ; the belly and the inside of the legs are snow-white ; the head in particular is handsomely marked with white.

“ I did not notice that this gazelle looked like blue velvet, and that its skin changed colour after death, as M. Sparrman says it does ; alive or dead, it looked just the same to me, and the colour of the specimen I brought back has never altered. I have seen another specimen at Amsterdam, which had been there more than fifteen years.”

The animal, which apparently was never found outside Cape Colony, had obviously been for some reason or other much reduced in numbers since Pallas's time ; very likely the large numbers of skins he mentions as having been brought from the Cape pointed to an extensive slaughter of these antelopes for hides, which had already begun in Kolbe's time.

At any rate, its extinction was at hand, for Lichtenstein, in 1803, speaking of the mountains near the Buffalo-jagt River, says that although

there was plenty of other game, the blau-bok was "almost exterminated," none having been seen since 1800, when one was shot, the skin of which went to Leyden. Later on in his book of *Travels*, he mentions that the blau-bok was said to occur occasionally, though almost exterminated elsewhere, in the inner valleys of the mountains between Stellenbosch and Graaf Reinet.

There seems to have been some doubt as to the exact last specimen of the blue-buck seen alive, for we find Lichtenstein saying, a couple of years after the publication (1811-2) of his *Travels*, when writing a general review of the antelopes, that the Berlin specimen was the best known to exist, and that this was shot in 1799. He adds that it used to be found only in the then already populous Zwellendam district.

Even the specimens which remain to confirm the descriptions of the writers who have been quoted here did not prevent some naturalists maintaining that the blue-buck was merely a young roan antelope, but this view is now given up, and never found universal acceptance. Besides the Paris and Vienna specimens mentioned above, there are others at Leyden, Stockholm, and Upsala.

The quagga of South Africa is the best known of animals which have become extinct in historical times, because its disappearance is

so very recent that it is within the memory of people still living ; but it is the least interesting, because it had not the marked distinctness of the others I have been speaking of, but was so closely allied to the existing Burchell's Zebra, that Mr. Selous, the well-known hunter, only considers it as the extreme southerly form of that widely ranging beast, which exhibits various local races in different parts of its range, losing the stripes by degrees as one travels from north to south. He points out, in his contribution on Burchell's Zebra in Rowland Ward's *Large and Small Game of Africa*, that the Boers called all the forms of Burchell's Zebra quaggas—"pronounced kwā-hā, in imitation doubtless of the cry emitted by the animal, which sounds like the syllables kwa-ha-ha, kwa-ha-ha, quickly repeated," as anyone may hear at the Zoo.

The quagga was the first to be known of this type of zebra, and was originally described by Edwards in his *Gleanings* as the female zebra, the male zebra being what we now call the mountain zebra, which was then *the* zebra, though now itself a rare animal verging on extinction, while the Burchell's is the kind usually seen. The quagga was described as *Equus quagga* by Gmelin, but Mr. R. I. Pocock, who follows Mr. Selous in considering it as merely an extreme race of Burchell's Zebra, points out that Daniell, who figured and described it in his *African Scenery*, published in 1904-8, was,

from his description, evidently acquainted with several types of quaggas, some of them much more marked than that which has always borne the especial name of quagga, as may be seen from the description requoted below.

“ This species of Wild Horse, which the Hottentots call Quahkah, is one of the most common and abundant of the larger animals that are met with on the barren plains of Southern Africa. It is generally found in numerous herds that are mostly accompanied by a few hartebeests and ostriches. They are tolerably swift; but the Boers sometimes succeed by stratagem to take them alive by throwing the noose of a rope over their heads. By domestication it soon becomes mild and tractable, and might be rendered extremely useful by patient training; yet, abundant as they are in the country, there are few instances of their being put to harness. They are stronger than the mule, live hardily, and are never out of flesh. They are variously marked; some with waved stripes on the neck only, others with bands across the shoulder, others marked on the haunches, somewhat like the zebra, which gave rise to an idea that was long entertained of its being the female of that animal; from which, however, it differs in almost every particular, except in the stripes, being in its shape infinitely more beautiful. The large head, the long ears, and the slender legs of the zebra partake very much of the character of

the common ass. The mane of the quahkah is curious, appearing as if trimmed by art. This animal is found on all the plains behind the first range of mountains beyond the Cape Peninsula."

The shape of the quagga, as Daniell says, was far handsomer than that of the donkey-like mountain zebra; in fact, it approached more nearly to the horse type, as does that of Burchell's Zebra. But from the accounts of other writers who knew the animal, it would seem to have been still more horse-like than that species; although, curiously enough, it was the mountain zebra that the Boers called the wild horse (*wilde paard*).

What is taken as the quagga is a brown animal, with white legs and tail, well striped on the head and neck either with black on a brown ground or with brown on a fawn ground, but with the stripes fading away altogether on the back or only represented by broken mottlings. There were never any distinct bands on the hind-quarters as was the case even with the original white-legged race of Burchell's Zebra—the typical *Equus burchelli*, which is itself now apparently extinct, and occupied a range just north of the quagga's.

There is thus a link missing between the brown and the striped "quaggas"—the bonte-quaggas, as the Boers called the Burchell's Zebras when they wanted to distinguish them—and as the two species both occurred in the

Orange Free State, but were said to keep separate, it is just possible that the two could claim a distinction of species. For when two creatures only differing in colour meet and associate they proceed to interbreed, and if the colours mix in consequence there is, of course, no distinction of species : at any rate, this often takes place with birds, as in the well-known case of the black carrion crow and black-and-grey hooded crow.

There are considerable differences, as Mr. Pocock points out, between the specimens, descriptions, and illustrations of the quagga which have come down to us, and these he thinks indicate different local races ; but it is just possible that occasional interbreeding with Burchell's Zebra would account for the larger amount of dark marking to be seen on some individuals and the darker stripes of others.

At any rate, the typical quagga was, according to Mr. H. A. Bryden, in Rowland Ward's publication before quoted, strictly confined to the Cape Colony, westward of the Kei River, some parts of Griqualand West, and the plains of the Orange Free State. In Cape Colony it had the plains to itself, as far as other zebras were concerned, the old original zebra having always been a mountain animal. It liked company, however, and habitually associated with the white-tailed gnu, as Burchell's Zebra, farther north, does with the black-tailed or

brindled gnu, while in both cases the ostrich came in to complete a triple alliance, no doubt dictated by considerations of safety, the bird excelling in power of sight, the beasts in scent and hearing.

The quagga, like other wild equines, was a high-couraged beast, would turn on man with teeth and hoofs if wounded, and had no fear of the spotted hyæna and wild dog, so that the Boers in early days of Cape colonization valued tame specimens as guards to their horses when out at night. It was, indeed, a comparatively easy beast to train and break in, and might easily have been made a useful domestic animal, though few attempts were made in this direction. Even in England, however, quaggas were seen in harness, for in the early part of the nineteenth century a pair used to be driven about London by Sheriff Parkins. Sir William Jardine found that one driven in a gig had as good a mouth as a horse, which Mr. Bryden says is not the case with Burchell's Zebra, which is hard-mouthed as a rule, though this animal, too, is more amenable to work than other zebras, and has been driven both over here—by Mr. Walter Rothschild—and even used in coaches at the Cape. These zebras, however, though willing, had not the stamina for sustained heavy work.

Unfortunately, however, the chief use the Boers found for the quaggas which roamed in thousands over the plains of the Cape, was to

shoot them for their meat, on which they fed their native dependents, and their hides, which they not only used at home, but exported in large numbers. Even in 1876, Mr. Bryden found old quagga-hide sacks in use among them, just after the beast itself seems finally to have disappeared, for the wild animal seems to have completely vanished by 1873, while the last specimen of the only two the London Zoological Gardens ever exhibited died in the year previous to this. Less than thirty years before immense herds were recorded by Sir Cornwallis Harris in the Orange Free State, and even in 1843 Gordon Cumming found large numbers in the north of Cape Colony; but already the Boers were constantly at work upon them, and the Free Staters were for more than a generation, Mr. Bryden informs us, as much interested in the hide business as in their general occupation of farming.

There are a good many specimens of the quagga existing in various museums, but that at South Kensington is not by any means a good one. Fortunately, however, some photographs were taken of the last Zoo specimen by Mr. F. York, so we can form a good idea of what the quagga looked like in life. The drawings of it which exist are mostly very poor; those given by Daniell and Sir Cornwallis Harris, for instance, although purporting to be done from living animals, are remarkably—not to say suspiciously—alike, and are not in

the least like any *wild* animal of the horse tribe so far as shape goes, but more resemble a cart-horse with a hog mane and stripes on its head and neck.

The quagga, as might have been expected, would interbreed with the horse, and there was a particularly celebrated case in which a mare of Lord Morton's, having borne a mule foal to a quagga, afterwards bore to a horse another which bore traces of stripes. Subsequent experiments by Professor Cossar Ewart with mares which first bred to a Burchell's Zebra and then to horses have not produced similar results, and this supposed influence of the first sire, so much believed in by dog-fanciers, is now very much doubted in scientific quarters, though, of course, it takes an unlimited amount of evidence to prove that such a thing is impossible.

Owing to the custom, above alluded to, of the Boers, in calling the Burchell's Zebra, which was not known till ten years after the quagga had been described, by the same name as this its very near ally, rumours that the quagga was not yet extinct have often been circulated, but there is now no doubt of this.

Monkeys, if not exactly on the most cordial terms with us, their superior relatives, have not been on the whole much persecuted; yet one owes its extinction to human agency.

The history of this monkey, known as Kirk's

Guereza, is so very short and sad that it reminds one of the baby's epitaph :—

“ I was so very quickly done for,
I wonder what I was begun for.”

In the Proceedings of our Zoological Society for February 27th, 1868, Dr. J. E. Gray of the British Museum published a short description, illustrated by a beautiful plate by the great animal painter, J. Wolf, of a new species of monkey which he had found in a collection of animals preserved in spirits and sent from Zanzibar by Dr. (later Sir) John Kirk.

This monkey belonged to the *Colobus* group, which are closely related to the lungoors of India (*Semnopithecus*); but the guerezas, as the *Colobi* are called, after the name of the best-known species, an Abyssinian one, have no thumbs, which at once distinguishes them. Like the lungoors, they are nice monkeys, with slender, elegant forms, agreeable faces, handsome long fur and long tails, and much more pleasant and less mischievous manners than the commoner monkeys—the bunders or macaques of India and the green monkeys or *Cercopithec*i of Africa. They are themselves purely African, just as the lungoors are Asiatic, and like the lungoors, keep almost entirely to the trees and feed mostly on leaves. Their fur, however, is usually handsomer even than that of the lungoors, but it is generally black and white, sometimes even all black, so

that the new monkey, which was named *Colobus kirki* after the naturalist who despatched it, was a very striking novelty, its colouration being of a tortoise-shell and white type, black, white, and bright bay.

The red covers the crown of the beast and its back, sides, and tail ; the back of the neck and shoulders running down to the arms, the outside of the arms themselves and of the thighs, with the hands and feet, are black, while the rest of the animal—the sides of the face, underparts, and inside of the limbs—are white. Although the hair on the crown is rather long, there are not the flowing whiskers, side flounces, or tail tufts found in some of the other guerezas ; but the colouring is so beautiful that Kirk's monkey was certainly one of the most handsome in the world, and might well have become a popular pet but for its unhappy fate.

It was only found in the island of Zanzibar, and in 1884, only sixteen years after its description, a note was published, in the *Annals and Magazine of Natural History*, from Sir John Kirk in Zanzibar, to the following effect : “ In the *Proc. Zool. Soc.*, Feb. 1868, p. 27, Dr. Gray described a new *Colobus*, and named it after me. That monkey then was rare, but still to be had in many of the wooded districts of this island. I am not aware that it has been found in Pemba Island or on the mainland ; and now I discover that, if not extinct, it has

become so rare as not to be procurable, even when I sent the hunters over the island. I have a report that it exists still in one spot which they could not reach. I think two specimens were sent to Germany some time ago ; but it looks as if the animal will be lost. This is due to the destruction of forest and jungle over the island."

The end of the story is told by Sir Harry Johnston in his book, *The Kilima-Njaro Expedition*, published two years later, where he says: "Like most great men who have helped to extend the British Empire, Sir John has one dark blot on his escutcheon. Warren Hastings exterminated the Rohillas, Governor Eyre was accused of too summarily suppressing the Maroons ; Sir John Kirk, more, perhaps, in the interests of British science than of British rule, has entirely destroyed an innocent species of monkey. The *Colobus kirki* had disappeared from nearly every part of the island of Zanzibar, but a rumour prevailed that it still lingered in a clump of forest as yet unvisited by hunters. Thither Sir John sent his *chasseurs* to report on the monkey's existence. After a week's absence they returned, triumph illuminating their swarthy lineaments. 'Well, did you find them?' asked the British Consul-General. 'Yes,' replied the men with glee, 'and we killed them, every one!' Wherewith twelve monkey corpses were flung on the floor, and *Colobus kirki* joined the dodo, the auk,

the rhytina, and the moa in the limbo of species extinguished by man."

Considering the feud between man and the land carnivora, it is rather remarkable that only one of these has become extinct. This is the Antarctic wolf of the Falkland Islands, which is the only native land beast, with the exception of a mouse, which inhabits this remote group; and the wonder is to find a creature of this size and type marooned by nature in this way, for the mammalian inhabitants of small islands are generally small themselves. In size the Antarctic wolf, although small for a wolf, is considerably larger than a fox; in fact, it is nearly as big as the well-known coyote or prairie wolf of North America, or, to use a more familiar beast for comparison, as an ordinary shepherd's collie. In colour it is the usual reddish black-ticked wolf-grey, but has a rather short but peculiarly coloured brush, black from about the middle to near the tip, which is white; this marking distinguishing it from any other of the dog kind. The food of this wolf is, or was, chiefly birds, especially the wild geese which inhabited its native islands; these geese, which were and still are very abundant there, are the beautiful Magellan or Upland geese often kept as fancy waterfowl in our parks—the gander grey and white with black legs, and the goose chestnut and black with yellow ones. They also fed on

penguins, and on the carcasses, at all events, of seals ; no doubt they preyed on the seal pups when they got the chance.

The first record of the existence of these isolated wolves is to be found in Dom Pernetty's *History of a Voyage to the Malouin Islands*, which voyage took place in the years 1763-4. Here he says that the "officers of M. de Bougainville's suite were, so to speak, attacked by a sort of wild dog ; this is, perhaps, the only savage animal and quadruped which exists in the Malouin Islands ; perhaps, too, this animal is not actually fierce, and only came to present itself and approach us, because it had never seen men. The birds did not fly from us ; they approached us as if they had been tame." Dom Pernetty was very likely right ; these wolves, like their companions the birds, were no doubt simply actuated by curiosity and ignorance of man's dangerous powers ; for such innocence has often been observed in the case of other inexperienced creatures both furred and feathered. But, of course, the curiosity of a carnivore, even if innocent, is liable to be embarrassing, and the early English visitors to these islands formed exactly the same impression as Pernetty's people had done. These were the men of Commodore Byron's command, who were at the islands in 1767 ; in his account of the *Voyage of the Dolphin*, the Commodore says that the master, who had been sent to take soundings, "reported at his return that

four creatures of great fierceness, resembling wolves, ran up to their bellies in the water to attack the people in the boat."

Bougainville, in his *Voyage round the World*, mentions this wolf as the only kind of quadruped on the islands; he says about its habits: "The wolf-fox, so-called, because it digs itself an earth and because its tail is longer and more fully furnished with hair than that of the wolf, lives in the dunes of the sea-shore. It follows the game and plans its trails intelligently, always by the shortest route from one bay to another; on our first landing, we quite believed that they were the paths of human inhabitants. It would appear that this animal starves for part of the year, so meagre and thin is it. It is of the size of an ordinary dog, and also barks like one, but weakly." He goes on to say that this wolf destroys many eggs and young birds.

Even in Byron's time war was being declared on the wolves by man, for he says that to get rid of them the grass was fired, "so that the country was in a blaze as far as the eye could reach for several days, and we could see them running in great numbers to find new quarters."

Darwin, during the voyage of the *Beagle* (1832-6), made acquaintance with these wolves, and in the work dealing with the zoology of that expedition, he says, after quoting Byron as to their boldness: "The habits of these animals remain nearly the same to the present

day, although their numbers have been greatly decreased by the singular facility with which they are destroyed. I was assured by several of the Spanish countrymen, who are employed in hunting the cattle which have run wild on these islands, that they have repeatedly killed them by means of a knife held in one hand and a piece of meat to tempt them to approach in the other. . . . These wolves do not go in packs; they wander about by day, but more commonly in the evening; they burrow holes, are generally very silent, excepting during the breeding season, when they utter cries, which were described to me as resembling those of the *Canis Azaræ*." This animal is the small jackal-like wolf or fox of Southern South America, and is said to bark, at any rate in captivity, so this statement is not inconsistent with Bougainville's account of the island wolf's voice. It is worth noting, by the way, that Byron says "they were always called wolves by the ship's company, but except in their size and the shape of the tail I think they bore a greater resemblance to a fox. They are as big as a middle-sized mastiff, and their fangs are remarkably long and sharp."

With regard to their distribution in the islands, Darwin says: "It is found both on East and West Falkland. . . . I was assured by Mr. Low, an intelligent sealer, who has long frequented these islands, that the wolves of West Falkland are invariably smaller and of

a redder colour than those from the eastern island, and this account was corroborated by the officers of the *Adventure*, employed in surveying the archipelago. Mr. Gray, of the British Museum, had the kindness to compare in my presence the specimens deposited there by Captain Fitzroy, but he could not detect any essential difference between them. The number of these animals during the past fifty years must have been greatly reduced; already they are entirely banished from that half of East Falkland which lies east of the head of San Salvador Bay and Berkeley Sound; and it cannot, I think, be doubted, that as these islands are now becoming colonized, before the paper is decayed on which this animal has been figured, it will be ranked among those species which have perished from the earth."

Just after the publication of this account, also in 1839, Colonel Hamilton-Smith, in his first volume on the Dog-tribe in the Naturalists' Library, speaks, under the heading of what he calls "the Falkland Island Aquara dog," of "seeing, in the fur stores of Mr. G. Astor, of New York, a large collection of peltry, which came from the Falkland Islands, where, according to the reports that gentleman had received, his hunters had nearly extirpated the species." An additional cause of destruction, the enmity of the sheep-owners, the islands having been chiefly exploited during the past

half-century as a sheep-run. Mr. R. Vallentin, in *Manchester Memoirs*, vol. XVIII, 1904, gives the date of their final extinction as 1876, and certainly Moseley, who was at the Falklands, in the course of the *Challenger* expedition in that year, says nothing about the wolves, to which, extremely observant as he was, he would certainly have alluded if he had even heard of their existence.

It is worth mentioning that a relative of these beasts still well known in the neighbouring mainland of South America, the colpeo or Magellanic wolf—a rather more foxy animal with a bigger and entirely black-tipped brush—has also always been noted for its fearlessness of man, which it still displays, according to Mr. Hesketh Prichard in his book on *Patagonia*. He found these “wolves” astonishingly bold, permitting an approach within a few yards, and most terrible robbers of camp provisions; moreover, they were fierce enough, a male attacked by his big greyhound Tom having met the dog “with a devastating bite,” and caused alarm amongst his horses. So it looks as if the fear felt by the old voyagers of the Falkland wolves may have had some foundation after all, and, on the whole, their complete extinction can hardly be a matter for very deep regret. There is a specimen to be seen in the South Kensington Museum which gives, though not in tiptop condition, quite a good idea of the species.

The only beast which has become extinct in Europe is the aurochs, or urus, which has attained considerable celebrity, it is true ; but as it was simply the wild ancestor of our common cow, it cannot fairly be classed among extinct animals, and I shall say what I have to say about it in the chapter dealing with the wild ancestors of our tame animals.

III

EXTINCT BIRDS AND REPTILES

WE have come, then, to the end of the very short list of beasts which have disappeared during the historic period, and it is time to say something about the extinct birds. These are, unfortunately, quite a numerous assemblage. Mr. W. Rothschild, in his monumental book on the subject, describes and figures more than fifty. The reasons why birds have suffered so much more extermination than beasts are two very simple ones. The first is that, as the species of birds are many times more numerous than those of beasts, there would in any case be a proportionately greater chance of some being exterminated; the second is, that birds are differently distributed over the world, often being found in remote islands, which beasts, except bats and seals, have hardly ever reached. Such birds are, of course, particularly liable to be exterminated, owing to the limited extent of their home, especially as many of them have lost the power of flight when living in such places.

It will be found that almost all of these extinct birds were island-dwellers, and so are

many of the kinds in danger to-day ; but there is one consolation, that, as a whole, they were not birds of any striking scientific interest or special attractiveness, and few of them would attract notice in a zoological garden. There never was, for instance, any bird so beautiful as the peacock exterminated, nor did any of them, so far as we know, except perhaps the *solitaire*, show any interesting habits.

There were, however, certain exceptions to this general insignificance of these poor departed birds, and these may be treated of in detail, some of them having quite an extended reputation, such as the dodo, the moa, and the great auk. Chief of these, of course, is the dodo, whose extraordinarily quaint and ugly appearance attracted so much attention that its fate was remembered ; it is the proverbially extinct creature—everyone knows the expression “as defunct as the dodo.” Even Lewis Carroll brings it in, along with the white rabbit and the mock turtle, as one of Alice’s animal acquaintances. The home of the dodo was on the island of Mauritius, and it was first discovered when Jacob van Neck, in 1598, took possession of the island for the Dutch. The account given by De Bry is in Latin, and reads, when translated, thus :—

“ Besides which [other birds he had been mentioning] there is to be seen another larger kind, bigger than our swans, with huge heads, half covered with a skin like a hood. These

birds have no wings; where these should be there grow three or four blackish feathers. The tail consists of a few soft curled feathers of an ashy colour. We called these *Nasty birds* (Walckvogel), because the longer they were cooked the tougher and more uneatable they got. Yet their bellies and breasts were well flavoured and tender. Another reason for the name we gave them was that we could get turtle-doves, which were much better eating, to our heart's content there."

The several pictures which were subsequently carefully drawn, some apparently from living birds, bear out this account, and the appearance of the dodo has long been well known—its huge beak, hooked and covered except towards the tip with a bare skin which was continuous with that of the face, so that the scantily feathered skin of the back of the head did look like a hood; the short thick legs, with the usual four toes, three in front and one behind; the wisp of a tail, and the heavy fat body, much too big for the wings, which were not actually absent, but simply very small and useless.

But it is worth while also quoting the account of an English writer who actually saw a live dodo in London, about 1638—Sir Hamon Lestrange—who says: "As I walked London streets, I saw the picture of a strange fowle hong out upon a cloth [gap in the MS.] and myself with one or two more then in company

went in to see it. It was kept in a chamber, and was a great fowle somewhat bigger than the largest Turkey Cock, and so legged and footed, but stouter and thicker and of a more erect shape, coloured before like a yong cock fesan, and on the back of dunn or deare colour. The keeper called it a Dodo, and in the end of a chymney in the chamber there lay a heape of large pebble stones, whereof hee gave it many in our sight, some as bigg as nutmegs, and the keeper told me shee eats them (conducting to digestion) and though I remember not how farr the keeper was questioned therein, yet I am confident that afterwards shee cast them all againe."

The pictures of the dodo, by the way, show its plumage as a sort of drab colour, with the wings and tail pale yellowish, not respectively black and grey, as the description of De Bry says. Perhaps the cock had the light-coloured wings and the hen the dark ones, but no sex difference is recorded. The beak seems to have been dark at the base, the colour extending over the face, and greenish yellow at the tip. The legs were also yellow.

It is curious that except the stones it swallowed, which are mentioned by other writers as well as Lestrange, nothing is said about what the dodo ate; their historians were much more concerned with eating the dodos themselves, and subsequent voyagers were not so dainty as Van Neck's party, for they killed



THE DUTCHMEN'S DODO HUNT.

them in numbers for food, and not only ate them fresh, but salted them down for victualling. In 1602 Willem van West-Zanen's men got a couple of dozen on one day, and on another occasion twenty, after a three days' hunt, most of which were salted, for two were more than enough for a dinner for the crew ; in fact, Sir T. Herbert, who saw them in 1627, said few were under fifty pounds weight. In 1638 François Cauche speaks of the dodos as birds of Nazaret, and says they made nests of herbs heaped together, and laid eggs of the size of the pelican's, which is about what one would expect. This is just as well, because Cauche, in his account, mixed up the dodo with the cassowary, which does not improve his credit as an authority. He says the egg was white, and that a stone as big as a hen's egg was laid beside it ; also that the bird's cry was like a gosling's. Herbert had mentioned that the bird, as one would expect, could not run fast on account of its fatness, and that it could not fly ; and P. W. Verstuffen, who visited Mauritius in 1611, said they could be caught by the hand, but those who attempted this had to look out for the birds' beaks, with which they could give a very severe bite.

Of course birds like this could not be expected to survive long unless protected, and after the Dutch colonized Mauritius in 1644, their doom was sealed ; in fact, the last notice of the dodo as a live bird is in the journal of Benjamin Harry,

chief mate of the ship *Berkley Castle*, which wintered at Mauritius in 1679, and all he says is to mention: "Dodos, whose flesh is very hard"; the poor dodo's obituary notice, like its introductory one, recording this reproach and adding the insult of depreciation to the injury of extermination.

No complete specimen of the dodo has been preserved; there was one in the Ashmolean Collection at Oxford till 1755, when it was destroyed on account of its decayed condition, the authorities evidently not knowing that it could not be replaced; but the head and a foot were preserved, and are still to be seen. A few other relics exist in other museums, and a good many bones have been obtained from the Mare aux Songes, a small marsh. There is a nearly complete skeleton in the South Kensington Museum.

These remains have shown that the dodo, whose relationship gave rise to much dispute, was really a gigantic pigeon related, curiously enough, to the green fruit-pigeons of the Eastern Tropics, which are purely tree-livers. One of them, the thick-billed green pigeon (*Butorion capelli*) as a matter of fact, has a beak which is remarkably like a dodo's in miniature, though, of course, smaller even in proportion.

Another pigeon with a far thicker beak, though not so long in proportion as the dodo's, is actually also a ground bird, though able to fly well. This is the manu-mea of Samoa, and it

has been called by ornithologists, on account of its resemblance to the dodo, *Didunculus* or dodlet. I have seen it alive at the Zoo. In any case, a connecting link with the more ordinary pigeons once existed in the shape of the dodo's near neighbour and relative, the solitaire, which was found on the island of Rodriguez, which was uninhabited until 1691, when a party of French Protestant refugees, under François Leguat, arrived and stayed for two years. Leguat's account is all we have to tell us about this bird's appearance and habits, but it is a very much better one than any of those which have been given of the dodo and skeletons which have been discovered in recent years have borne out his remarks as well as mere bones could do.

The solitaire was a big bird, larger than a turkey, high on the legs and long in the neck, with a bill somewhat on the same lines as that of the dodo, but much smaller, simply a strengthened edition of the ordinary fruit-pigeon's bill; in fact, it was not a striking feature of the bird. The wings were not so useless as in the dodo, although far too small for flight, because at the pinion-joint there was a sort of knuckle-duster, a rounded mass of bone (covered with horn probably) with which the birds fought, although they also used their bills. The wings also were used in the curious dance the birds performed, whirling round and round twenty or thirty times in one direction in

four or five minutes, during which time they made a noise with their wings like a rattle, which could be heard more than two hundred paces off, and served instead of a call-note. They had hardly any tail, and the hinder part of the body was rounded like a horse's croup. The male birds weighed up to forty-five pounds, and were usually of a greyish and brown colour; the hens, which were smaller, were either brown or blond—the colour of fair human hair, as Leguat says. The “ blond ” birds were no doubt semi-albinos, what our present-day fanciers call cinnamons, and it is interesting in this connection to note that cinnamon varieties of wild birds are nearly always hens.

The hens were very handsome; their sleek plumage and graceful gait so much impressed the colonists that they often had not the heart to kill them. It is not often that a hen bird is considered more beautiful than the cock, except in the few cases where her feathers are brighter; but no doubt the large male had a very coarse look, as in the case of the well-known Muscovy duck, of which the female is a handsome shapely bird as ducks go, and much smaller than her mate, though of similar plumage.

The eye was black and lively, not yellow like the dodo's, which are also, by the way, said to have been very bright, and there was no sort of crest on the head.

The solitaire was much more active than the dodo, as it was not easy to catch in the woods,

but it could not run fast enough to escape a man on open ground. From March to September they were very fat and good to eat, especially the young.

The birds were called solitaires because they very rarely went in flocks, usually being seen only singly or in pairs; they made their nests of palm leaves on an open spot, raising a heap a foot and a half high. The egg was as big as a goose's, and took seven weeks to hatch, the cock and hen taking turns in the sitting. While breeding the old birds would not let any other solitaire come within a couple of hundred yards of the nest, but what Leguat thought particularly strange, and was sure of, as it had been confirmed by several observations, was that the old birds would only attack those of their own sex; if the parent on duty found a stranger of the opposite sex approaching, it would summon its partner by the rattle-call of the wings to drive it away, for males would not attack females, or vice versâ.

Everybody must have observed the same sort of thing in the common cock, who is very gentle with hens, though fierce to his own sex; and I have seen the same thing with the pretty little Indian pigmy goose or cotton-teal (*Nettapus coromandelianus*), in which the drakes would never peck the ducks. But the female solitaire must have been unusually forbearing, for I do not know of any hen bird which feels scruples about attacking a male; indeed,

such a feeling is foreign to female animals generally.

The young bird was not able to provide for itself for several months, and after it had left the nest the old bird always kept company, even when they met others of their kind. The colonists often noticed that a few days after a young bird had left the nest, a flock of thirty or forty others brought another young one to it; then the old pair joined the flock, and all went away together. Naturally the spectators often followed to see what happened, and found that the old ones afterwards went away singly or in pairs and left the two youngsters together; and equally naturally they called this the birds' "marriage."

Leguat admits that "this particularity has something in it which looks a little fabulous. Nevertheless," he says, "what I say is sincere Truth, and what I have more than once observed with Care and Pleasure." Personally, I am quite willing to believe him, for as he has given us the best account of any extinct creature after Steller's of the sea-cow, he may just as well have been right in this particular as the skeletons have proved him to be about the solitaire's wing-knobs, which are quite unique among birds, though spurs and small blunt projections on the wings are found in several species.

The solitaires fed on fallen fruit, and, no doubt, like other pigeons, which are less vegetarian than is often supposed, would eat worms,

snails, and slow-moving insects, such as caterpillars, as well; the diet of the dodo was doubtless similar, but it was better fitted for large morsels, and could no doubt tear up its food with its very powerful bill. The solitaire always had a stone in its gizzard. No solitaire was ever taken away from its native land. Leguat says, that although they were not very shy when unmolested, and in such cases would often come up to one, they sulked in captivity, would not eat, and even shed tears, though without making any noise; thus they pined to death.

The fact that they would not live in confinement, although not naturally shy, is not unexampled; our bird-fanciers, for instance, find that the common blue-tit, one of the tamest of our little birds, is very difficult to accustom to cage life. I knew one keen aviculturist who would sit up all night with a new-caught blue-tit, tempting its appetite with mealworms, or it would simply have moped and died within twenty-four hours. And the circumstance of birds shedding tears, though strange, is not incredible. Mr. C. W. Beebe, of the New York Zoo, has seen a flamingo do so, when frightened by the terrifying antics of a condor in the same aviary, although the big vulture meant no harm.

Neither was any skin of the bird sent home, apparently, and it became extinct in less than a century after the island was visited by Leguat :

human persecution would be quite enough to account for this, and the sad fate of the solitaire is particularly regrettable, for though it had not the striking ugliness of the dodo, which differs from all other large birds in being developed in the direction of bulk rather than length in all parts of its body, the solitaire was evidently a much more interesting creature.

Quite a number of bones and skeletons were got from Rodriguez during the latter half of the last century, and two of these skeletons can be seen in the South Kensington Museum.

The great auk, owing to its having been a European bird, and at once the only flightless bird and the only one which has become extinct in our quarter of the globe—or in the northern hemisphere, for that matter—has gained a reputation which is a good deal higher than its scientific interest, though from a practical point of view its loss, like that of Steller's sea-cow, is a very serious one.

As is shown by the abundant occurrence of its remains in prehistoric "kitchen-middens," it had long played an important part as a source of human food before civilization began, and to this is no doubt due the fact that it had become much scarcer and more localized in the older countries of Europe than it was on the American side, when historical records of it began to appear. For as humanity took to navigation, the great auk's loss of the power of flight began

to tell against it, since wherever it could effect a landing man could follow it and destroy it.

In appearance, except for its size, it was very similar to the razorbill, still one of the best known and most abundant of the Auk family, having a large deep bill, a heavy body, and webbed feet with only the three front toes, the hind toe being absent as in all auks. As in the razorbill, its plumage was black above and on the throat, and white below, the throat also becoming white in winter; but it had at all seasons a large white patch in front of the eyes, where the razorbill has only a white line. In size it far surpassed not only the razorbill, but all other auks, none of which are as large as the common wild duck, while the great auk was as big as a tame goose. Its wings, however, though perfectly formed, were smaller than the razorbill's, the flight-feathers being disproportionately short. They were, however, doubtless very useful as paddles, for all the Auk tribe appear to fly when under water, though on the surface they swim with their feet like all other sea-fowl except the penguins, which use only their paddle-like wings when either upon or below the surface.

The great auk, by the way, was the original penguin, its name having been transferred to what we now call penguins when these birds were discovered in the South Seas, on account of their resemblance to this flightless diver of the north; and in French at the present day the

Auks are called *Pingouins*, the penguins being distinguished as *Manchots*.

On land the great auk appears also to have resembled the razorbill, sitting erect on its heels like a dog begging, and it would seem to have also been able to stand up on its toes and walk in this position like its small ally, for if it had shuffled along on its heels as the guillemot usually does, it could hardly have got along as fast as a man walking, as we are told it did. But in any case it was not active on land, and probably, like the Auk family generally at the present day, it rarely came ashore except in the breeding season, when it followed the usual Auk custom of laying one large egg on the bare rock. This egg, for the shells of which such extravagant prices are paid, has nothing remarkable about it, being simply like the razorbill's egg enlarged to the size of a swan's; it was rough in surface and creamy in colour, with black markings of variable size and amount. Nothing exact is known about the young bird, but this could hardly have differed much except in size from other young auks, and no doubt, like them, took to the sea before it was fully fledged. Fledged young birds could be known from adults in winter plumage by having fewer of the transverse ridges on the bill, which were found in this species as in the razorbill, though in the great auk they were more numerous.

On St. Kilda, almost the only locality in the British Islands where the bird bred, it used to

arrive on the first of May, and go away about the middle of June, which certainly points to the young leaving the rocks early in life.

At sea it swam with the bill up and neck drawn in, and seldom went out of soundings ; its food was fish, and some specimens were captured by offering them fish from a boat, or even hooked on a line. But such specimens were no doubt sickly, or starving for some other reason, for a diving-bird in low condition is as badly off as a bird which hunts on the wing under similar circumstances, since it is not equal to the exertion necessary to capture the food it so much needs.

More than one specimen has been kept in captivity for some months, but none seem to have got into any menagerie, public or private, or to have lived as long as a year. It may be noted that all the Auk family have proved to be delicate in captivity, unlike the penguins.

The great auk did not, as far as is known, range north of the Arctic Circle, although ideas got about that it was a Polar bird ; in fact, it is only certainly known to have bred in St. Kilda, Orkney, the Faroes, some rocks off the coast of Iceland, Danell's Islands off South-west Greenland, and on many islands off the Newfoundland coast, especially Funk Island, its southern limit being apparently Cape Cod.

It was only really numerous on the American side of the Atlantic, and there it was worked so unmercifully, at first for ships' victualling and

then for its feathers, that it is not surprising it became extinct. Like penguins, the great auks did not take to the sea at the first alarm—no doubt because the chief enemies of these birds are sea creatures such as the grampus—and so it was the usual practice to drive them aboard ship and kill them there, or collect them in pounds built of stones on shore. Many are known to have been killed out of sheer wantonness, and even, with horrible cruelty, burnt alive.

About 1497 this campaign against the American great auks began, and it says much for the extraordinary numbers of these birds that not till 1785 did they approach extinction; in that year George Cartwright said that it was the custom then for men to spend whole summers on the island to kill birds for their feathers, and that this could only result in their "being diminished to almost nothing, particularly the penguins, for this is now the only island they have left to breed upon." But nothing seems to have been done, and the great auk became extinct in American waters before the last century was half over.

On the European side it lingered for a good many years on the Geirfuglasker—gare-fowl skerry, gare-fowl being a name often applied to this auk—but nature itself seemed to be against the doomed bird, and in 1830 volcanic disturbances resulted in the submergence of the Geirfuglasker. The birds, or some of them,

then resorted to Eldey, a rock nearer the coast, where there was only one landing-place, and here the last of the great auks were deliberately captured for collections; the last two known to have lived were thus caught in 1844, so that their extinction on both sides of the Atlantic was nearly simultaneous.

Although the great auk was not more interesting scientifically than several flightless birds which still exist, such as the flightless grebe of Lake Titicaca in the Andes, and the kakapo or owl parrot of New Zealand, it may be safely said that there is none whose extinction reflects more discredit on humanity, since it could easily have been saved, for it is reckoned that upon Eldey at least sixty were killed—quite enough to have kept the species going if they were let alone—to say nothing of the iniquitous proceedings on Funk Island.

It is small consolation that the species is better represented in collections, public and private, than any other extinct animal, there being about eighty skins and seventy eggs in existence, besides skeletons, detached bones, and a few spirit specimens of the internal parts. Counterfeit skins—made up of those of razor-bills and other birds—and artificial eggs have also been made, so that no museum of any pretensions has an excuse for being without some presentation of this ill-fated bird.

The moa—or rather moas, for there were a

whole family of them—of New Zealand, though not very well known to the public, will always be remembered as having created one of the greatest of zoological sensations.

In 1839, as Sir Richard Owen tells us in his *Memoirs on the Extinct Birds of New Zealand*, there was brought to him at the College of Surgeons a fragment of bone for which its owner wanted ten guineas, saying that he had got it in New Zealand from a native, who told him that it was the bone of a great eagle. Owen told him that it was not like the bone of such a bird, but only a marrow-bone, but afterwards consented to have a further look at it, and on comparing it with the skeletons of a bullock and an ostrich, found it really was part of the thigh-bone of a bird, of an unknown but very large kind, the ostrich being the biggest bird then known ever to have lived. The Museum Committee, however, would not buy the relic, and when Owen drew and described it, the Publication Committee of the Zoological Society had some hesitation in accepting the account, and ultimately took it on condition of the responsibility of the paper "resting entirely with the author," for the state of the bone suggested that it belonged to a kind of bird still living, and such a big bird was not likely to have been overlooked in New Zealand, even if it could have found a living there.

However, as the fame of this remarkable identification of a remarkable bird spread,

many more remains came to light, and ultimately it was discovered that there had been in existence, as above remarked, not one kind of moa, but several; the exact number has never been as yet determined, the estimates ranging from six to a couple of dozen.

That there were a good many is undoubted—the variations in size and shape of the remains show that—and while some of these birds were not bigger than large turkeys, others were much larger than ostriches, the biggest of all having a drumstick-bone over a yard long, and standing twelve feet high, while the ostrich is only eight, and is much less massive in build than the moas were.

Even feathers have been discovered, and these had a long aftershaft, or supplementary plume, so that they appeared double, like those of the emu, which they much resembled. In fact, the general appearance of the moas must have been more like that of the emu than of any other living bird, but they had shorter and stouter legs, with a small hind-toe on the feet, which the emu has not, and, generally speaking, no wings at all, while the emu has wings, though very small ones, not noticeable except on close inspection.

They all had short, emu-like beaks, but these differed slightly in form, being more pointed in some than in others, and in some of them the legs and feet, which were always very powerful, were so broad and short that these birds are

called elephant-footed moas. One or two of these heavy kinds were far bigger, as far as bulk and weight go, than the tall birds. The hens are believed to have been bigger than the cocks, as in the emu ; their eggs have been discovered, the shells of which were not so thick as that of the ostrich's egg, though the eggs themselves were larger.

It is supposed that these birds fed largely on the roots of the fern so abundant in New Zealand ; they certainly swallowed pebbles to aid digestion, as numbers of these have been found in association with the remains.

The existence of giant birds in New Zealand had been suggested before Owen's identification of the bone by Polack, who in his *New Zealand*, published in 1838, said he had seen large bird bones, and been told by the natives that long ago they had heard by tradition that great birds existed which had been hunted down and destroyed for food. Subsequently, collected traditions, and the discovery of bones which had been charred, have confirmed this, one of the great elephant-footed species having evidently been a frequent victim.

Of course, hunting birds like this was not child's play. The ostrich is said to kick worse than a mule, and to be able to knock a hole in corrugated zinc, and he is a weedy weakling compared to the great moas with their huge feet and thick, short shanks ; so it is not surprising to hear that the natives had to use

stratagem in attacking them, lying in ambush by their tracks and having the birds driven towards them, when they speared them, with lances cut near the point, so that this should break off and be left in the body of the bird, which was thus considerably weakened when it got out into the open, and more easily finished off.

Naturally a great deal of tradition is unreliable and difficult to date with anything like accuracy, and a very old Maori poem is said to contain the phrase, "Lost as the moa is lost," showing that the natives themselves regarded the birds as long extinct; but it is pretty generally agreed that moas were living less than half a dozen centuries ago, and remains have been found with not only skin and feathers, but mummified flesh adhering to the bones.

There is even a story that some of the biggest specimens existed down to our times; in 1842, a missionary, the Rev. W. Williams, who had procured and sent to England many bones of what he quite independently recognized as giant birds, wrote to Dr. Buckland, at Oxford, as follows, in a letter concerning them:—

"Within the last few days I obtained a piece of information worthy of notice. Happening to speak to an American about the bones, he told me that the bird is still in existence in the neighbourhood of Cloudy Bay, in Cook's Straits; he said that the natives there had mentioned

to an Englishman of a whaling party that there was a bird of extraordinary size to be seen only at night on the side of a hill near there ; and that he, with the native and a second Englishman, went to the spot ; that after waiting some time they saw the creature at some little distance, which they describe as being fourteen or sixteen feet high. One of the men proposed to go nearer and shoot, but his companion was so exceedingly terrified, or perhaps both of them, that they were satisfied with looking at him, when in a little time he took the alarm and strode up the mountain. This incident might not have been worth mentioning, had it not been for the extraordinary agreement in point of size of the bird." Mr. Williams had concluded from the remains that " the greatest height of the bird was probably not less than fourteen or sixteen feet."

Next year, Colonel W. Wakefield, in a letter written from Wellington to Mr. J. R. Gowen, said : " I have heard several stories of live moas having been seen ; one, that the enormous size (higher than our one-storied houses) frightened the person, an Englishman, who was going to shoot it ; but I don't believe anyone has seen a live one lately."

Recent writers do not seem to notice these stories, and it must be borne in mind that the large moas were always rarer, apparently, than the smaller ones, and that judging from the comparative freshness of the bones, these

smaller birds were the longest survivors, which is just what one would expect; but we must remember that a contemporary of the moa still exists for all we know—at any rate, several specimens have been captured alive, one within the last twenty years, although the bird was first described from bones found along with those of moas. This is the notornis of naturalists, the moho or takahe of the Maoris, a large blue, flightless moorhen very closely related to the beautiful porphyrios, of which several kinds are found in warm countries in the Old World, and some of which are always to be seen at the Zoo.

It is thus quite possible that some moas did survive in out-of-the-way places till recently, especially if they were nocturnal birds; the native tradition of their extinction would not necessarily prove that they were gone everywhere in the islands; an extinct creature is often soon out of mind as well as out of sight—even the dodo was suspected of being fabulous at one time, since no tradition of its existence survived in its native island.

The moas had other troubles besides human persecution to contend with; their remains have been found in numbers in certain places under conditions showing that they had perished from natural causes. Like quadrupeds, they were subject to accidents from cold, drought, and getting bogged; and even some of the existing flying birds of New Zealand have been

recorded as now and then suffering widely from failure of food—a much more serious thing for the flightless moas. Moreover, in addition to the fights which Maori tradition says they had between themselves, they were probably attacked by an extinct eagle whose bones are found along with theirs. This was a very big bird, half as large again as the golden eagle, and with stronger feet, though its wings seem to have been shorter; most likely it was the worst enemy of the young birds and of the old ones of the smaller kinds, and became extinct as its prey disappeared.

There can be no doubt, however, that man himself, as native tradition says, was the chief exterminator of the moas, although an ingenious theory has been suggested to the effect that these birds were more or less domesticated, and that what we think were wild species were really often only different tame breeds. It is true that the existence of several different kinds of these birds in a small country like New Zealand has always been a puzzle, but there is exactly the same trouble about the existing New Zealand cormorants, where the same explanation will hardly apply. Out of forty known kinds of cormorants New Zealand has no less than sixteen, one of them being our own common cormorant; while all over Europe this, the shag, and the dwarf cormorant of Eastern Europe are the only kinds known, and there is nothing about the conditions of life for these

birds in New Zealand to explain such a collection of different kinds there.

As before remarked, the majority of the other historically extinct birds are not such as would excite general notice anywhere, and hence can hardly claim a place in a work of the present scope, but an exception may be made in favour of the celebrated passenger pigeon of North America, whose case is remarkable in several respects—if indeed it is really extinct, as seems all too probable now.

In itself, except for its long, pointed, parakeet-like tail, this bird was a very ordinary-looking pigeon, its size being a little less than that of the common tame bird, and its colour the common pigeon-blue in the cock, and drab in the hen, slightly chequered with black on the wings. Its general habits also called for no special remark; it fed on the usual food of wild pigeons, herbage, seeds, and grubs and worms, and was especially fond of beech-mast, and a sore pest to the farmers' crops. It differed from most pigeons, however, in laying only one egg instead of the usual two, and from nearly all of them in always keeping in large flocks, in the breeding-season as well as out of it.

Hence, when these birds made up their mind to nest anywhere the whole neighbourhood knew about it, and all enemies—human, furred, and feathered—gathered to the spoil, and worked havoc on the defenceless multitudes.

In fact, it was said that when there was a pigeon-roost in any neighbourhood, the inhabitants for weeks ate, talked, and thought of nothing but pigeons ; the term stool-pigeon, applied to the unfortunate blinded bird which was perched on a movable stick and made to flutter to attract the flocks into the clap-nets, became a proverbial expression, like "decoy-duck" or "stalking-horse" among ourselves, and a regular profession of pigeon-netting sprang up.

A good many birds were sent to Europe alive, and many were even turned out in England after the thirties ; this, Howard Saunders thinks, may account for the appearance of the five specimens which have been shot at different times in Britain, one of which, at any rate, showed signs of having been in captivity. The Zoological Society has possessed nine specimens at different times, the last of these having been those presented by Mr. F. J. Thompson in 1883, when the species, as will be seen presently, was already on the decline, and approaching the extinction which seems to have overtaken it. The best idea of the numbers of the passenger pigeon in its palmy days is given in the following quotation from Wilson's *American Ornithology*, written a century ago :—

"The roosting-places are always in the woods, and sometimes occupy a large extent of forest. When they have frequented one of those places for some time the appearance it

exhibits is surprising. The ground is covered to the depth of several inches with their dung ; all the tender grass and underwood destroyed ; the surface strewn with large limbs of trees, broken down by the weight of the birds collecting one above another ; and the trees themselves, for thousands of acres, killed as completely as if girdled with an axe. The marks of their desolation remain for many years on the spot ; and numerous places could be pointed out, where, for several years after, scarcely a single vegetable made its appearance. When these roosts are first discovered, the inhabitants, from considerable distances, visit them in the night, with guns, clubs, long poles, pots of sulphur, and various other engines of destruction. In a few hours they fill many sacks and load horses with them. By the Indians, a pigeon-roost or breeding-place is considered an important source of national profit and dependence for that season, and all their active ingenuity is exercised on the occasion. The breeding-place differs from the former in its greater extent. In the western countries, viz. the States of Ohio, Kentucky, and Indiana, these are generally in backwoods, and often extend in nearly a straight line across the country for a great way. Not far from Shelbyville, in the State of Kentucky, about five years ago, there was one of these breeding-places, which stretched through the woods in nearly a north and south direction,

and was said to be upwards of forty miles in extent! In this tract almost every tree was furnished with nests wherever the branches could accommodate them. The pigeons made their first appearance there about the 10th of April, and left it altogether with their young before the 25th of May. As soon as the young were fully grown, and before they left the nests, numerous parties of the inhabitants, from all parts of the adjacent country, came with waggons, axes, beds, cooking utensils, many of them accompanied by the greater part of their families, and encamped for several days at this immense nursery. Several of them informed me that the noise was so great as to terrify their horses, and that it was difficult for one person to hear another speak without bawling in his ear. The ground was strewed with broken limbs of trees, eggs, and young squab pigeons, which had been precipitated from above, and on which herds of hogs were fattening. Hawks, buzzards, and eagles were sailing about in great numbers, and seizing the squabs from the nests at pleasure; while, from twenty feet upwards to the top of the trees, the view through the woods presented a perpetual tumult of crowding and fluttering multitudes of pigeons, their wings roaring like thunder, mingled with the frequent crash of falling timber; for now the axe-men were at work, cutting down those trees that seemed to be the most crowded with nests, and contrived to fell them in such a

manner, that, in their descent, they might bring down several others, by which means, the falling of one large tree sometimes produced two hundred squabs, little inferior in size to the old ones, and almost one heap of fat. On some single trees, upwards of a hundred nests were found, each containing one squab only, a circumstance, in the history of this bird, not generally known to naturalists. It was dangerous to walk under these flying and fluttering millions, from the frequent fall of large branches, broken down by the weight of the multitudes above, and which in their descent often destroyed numbers of the birds themselves; while the clothes of those engaged in traversing the woods were completely covered with the excrements of the pigeons. These circumstances were related to me by many of the most respectable part of the community in that quarter; and were confirmed, in part, by what I myself witnessed. I passed for several miles through this same breeding-place, where every tree was spotted with nests, the remains of those above described. In many instances I counted upwards of ninety nests on a single tree, but the pigeons had abandoned this place for another, sixty or eighty miles off towards Green River, where they were said at that time to be equally numerous. From the great numbers that were continually passing over our head to or from that quarter, I had no doubt of the truth of this

statement. The mast had been chiefly consumed in Kentucky; and the pigeons, every morning, a little before sunrise, set out for the Indiana territory, the nearest part of which was about sixty miles distant. Many of these returned before ten o'clock, and the great body generally appeared on their return a little after noon. I had left the public road to visit the remains of the breeding-place near Shelbyville, and was traversing the woods with my gun, on my way to Frankfort, when, about one o'clock, the pigeons which I had observed flying the greater part of the morning northerly, began to return, in such immense numbers as I had never before witnessed. Coming to an opening by the side of a creek, called the Benson, where I had a more uninterrupted view, I was astonished at their appearance. They were flying with great steadiness and rapidity, at a height beyond gunshot, several strata deep, and so close together, that, could shot have reached them, one discharge could not have failed of bringing down several individuals. From right to left, as far as the eye could reach, the breadth of this vast procession extended, seeming everywhere equally crowded. Curious to determine how long this appearance would continue, I took out my watch to note the time, and sat down to observe them. It was then half-past one; I sat for more than an hour, but instead of a diminution of this prodigious procession, it seemed rather to in-

crease, both in numbers and rapidity; and anxious to reach Frankfort before night, I rose and went on. About four o'clock in the afternoon I crossed Kentucky River, at the town of Frankfort, at which time the living torrent above my head seemed as numerous and extensive as ever. Long after this, I observed them in large bodies, that continued to pass for six or eight minutes, and these again were followed by other detached bodies, all moving in the same south-east direction, till after six o'clock in the evening. The great breadth of front which this mighty multitude preserved would seem to indicate a corresponding breadth of their breeding-place, which, by several gentlemen who had lately passed through part of it, was stated to me at several miles."

It would at first sight seem impossible for such multitudes of pigeons to be completely exterminated, especially when we consider that our wood-pigeon, which comes nearest among European birds to the passenger pigeon in habits, is so far from suffering from the inroads of man that it is the farmer's worst enemy among birds nowadays. As, however, the American bird had the same sort of enemies to contend with as other pigeons, and, laying only one instead of two eggs at a sitting, could only increase half as fast as most of them, it would seem as if the great hordes of passenger pigeons were capital, so to speak, which had

been accumulating for ages in the forests, as the bisons did on the plains.

Be that as it may, by the time the last century was three-parts over the pigeons were showing marked signs of diminution, for in the older civilized parts of the United States, such as New England, there were no more great roosts, and the birds had the ordinary habits of wild pigeons, breeding in single pairs; but even as late as 1892 they were exported east from the Indian territory by the barrellful.

This, however, was the last of their abundance, and so rapidly did their decline proceed that when the present century opened it was believed there were hardly any wild birds left. A few still existed in aviaries, but the strain was much "inbred," and all hope of saving the species by this remnant was lost—they died off till only one living specimen, a female in the Cincinnati Zoo, aged twenty years, was in existence while this book was being written. There are plenty of them in museums, and a good pair may be seen in the Bird Gallery at the South Kensington Museum.

It would hardly seem that man's persecution alone is responsible for the whole tragedy, though, apart from the numbers killed by man, his driving the survivors into northern parts of their range, where they could not bring up their young successfully, had no doubt a great deal to do with it. Moreover, disasters during migration, when numbers were driven

by weather into the great lakes and drowned, are cited as a great cause of mortality, and it has been suggested that disease may have had something to do with it. This, although no proof has been advanced, seems very likely, as our wood-pigeon sometimes suffers badly in this way, the domestic pigeon appearing to be the source of infection with the throat disease known to fanciers as canker. But, whatever the cause or causes, it seems we have seen the last of this valuable, beautiful, and interesting bird.

The age of sensational reptiles having gone by before man appeared, there has been nothing very remarkable in the reptilian class for him to exterminate; yet, as usual, an evil fate has fallen on the harmless and useful kinds, and most of the race of giant tortoises has vanished from the earth. Fossil remains show that large land-tortoises were once widely distributed on the continents, but in man's historical knowledge none have existed there; all that we know of were confined to small and remote islands, the Mascarene Islands and Aldabra group in the Indian Ocean, and the Galapagos Islands almost on the Equator, in the Pacific.

It is a curious fact that the tortoises from such distant localities were much alike in type, and also that there were no small tortoises on these islands; that there should generally have been only one large kind on each

is not unnatural. These giant land-tortoises, whose shells measure from two to four feet in length, had the habits of land-tortoises in general, so far as we know them; that is to say, they were vegetarian feeders and slow movers. Nor did they differ much from ordinary tortoises in shape, though the species inhabiting the Galapagos group were remarkable for the length of their necks, which they often held erect high above the shell. The differences between the species are not for the most part of any general interest, so it will be sufficient here to mention briefly the fate of those which are known to be entirely extinct.

The tortoises of the Mascarene Islands—Mauritius, Rodriguez, and Réunion—were, of course, compatriots of the giant flightless pigeons, the dodo and solitaire, and other flightless birds of those islands, and not unnaturally shared their fate. These large tortoises, it was universally agreed, were very good for food, and they were most convenient subjects for ships' victualling. It was not even necessary to kill them and salt them down; like reptiles generally, they could live long without food, and were simply taken on board alive and kept till they were required for slaughter.

The great land-tortoise of Mauritius is of especial interest as being the first giant kind ever scientifically described. Perrault, in 1676, called it "La Tortue des Indes," and stated it came from Coromandel. Dr. Günther, in his

valuable memoir on these big tortoises, published by the British Museum, points out that this was, of course, a mistake, no such tortoises being known in India, but that it was very likely that a ship coming from India would touch at Mauritius. The large tortoises there, which were not so big as some of those found elsewhere, not exceeding three feet in length of shell, were a great stand-by for many years. In 1740, Grant, in his *History of Mauritius*, speaks of them as used, along with sea-turtles, not only for the food of the inhabitants, but for barter with passing ships which touched on their way to India.

In Rodriguez they were still commoner, for Leguat, our authority on the solitaire, says that they could be seen there by two or three thousands in a flock, "so that you may go above a hundred paces on their backs." He also mentions a custom they had of setting sentinels on the outskirts of the flock, who watched with head erect, though it is difficult to see what enemies these large tortoises could have had in such a place, or what they could have done to escape them if forewarned, other than follow the usual tortoise plan of drawing their heads and feet within the shell. In 1761, Mauritius was drawing on Rodriguez for supplies of these tortoises, for, according to Admiral Kempenfelt, thousands of them were being brought to the Mauritius hospital by small craft specially engaged in this work.

In addition to human inroads, the tortoises appear to have been persecuted by dogs, which devoured the young, while many must have perished when the bush was fired to make clearings. At any rate, early in the nineteenth century the tortoises of Mauritius and Rodriguez were extinct, and those of Réunion seem to have gone even before; indeed, their existence is only known by the accounts of old writers, for no remains have been obtained on this particular island.

The Aldabra tortoises have been protected for many years; and though those on the Galapagos have been hunted down relentlessly by dogs which have run wild as well as by man, so that an expedition which visited the islands in 1901 believed that they had brought away all there were, it is probable, according to Mr. Ditmars, of the New York Zoological Park, that some may yet remain; and in any case there are some living in various zoological gardens, so that not all the races of this group of islands have disappeared completely, though, of course, as far as chances of survival go, they may as well be in a museum as in zoological gardens, except in the Tropics, where they could live in the open and breed.

As a matter of fact, a good many have been carried about and kept in different localities in the Tropics far from their native homes; a celebrated individual was the Colombo tortoise, which lived in the capital of Ceylon under

the Dutch Government before it came under our rule. Tortoises generally are long-lived, and it is estimated that one of these monsters exceeding four feet over the curve of the shell may be four hundred years old. This longevity, as Dr. Günther points out, explains the great numbers of these reptiles which used to inhabit their native islands, since it would mean several generations living side by side.

Indeed, the natives of the Galapagos told Darwin, who gave a full account in his *Voyage of the "Beagle"* of the habits of the great tortoises, which were then numerous, that the large specimens never seemed to die except by some accident, such as falling over a precipice. Perhaps even this need not have been accidental; land-tortoises are the most intelligent of reptiles, in spite of their stupid appearance, and as the males fight by butting each other, it is quite possible that an inquest on the body of a precipitated giant might result in a verdict of wilful murder against another tortoise. At any rate, although these big tortoises have the reputation of being perfectly harmless, a keeper at our Zoological Gardens once told me that one specimen shown there would try to crush his leg with its shell against the wall of its pen if it got the chance; but all such observations on the mental and moral peculiarities of the big tortoises will apparently have to be made soon to be of any use.

IV

ANIMAL FOES AND RIVALS OF MAN

OF all the wild beasts with which man has had to contend the lion is the most notable, and his great strength and noble appearance have always compelled our admiration, in spite of the damage and danger due to his ravages. Moreover, his original range included those countries which were the seats of the oldest civilization, so that the conflict between the king of beasts and mankind was inevitable, at any rate as soon as live-stock began to be kept. In the Bible there are more than a hundred references to him, and everyone is familiar with the brave shepherd-boy David's encounter with the beast and with Samson's strange find of a swarm of bees in the dried-up carcass of one he had killed. The lion in Palestine was evidently often a man-eater ; not only do we hear of more than one person killed by the beast, and of the ravaging of Samaria by lions after the desolating of Israel by the Assyrians, but the danger of " a lion in the way " was the stock excuse of the sluggard.

Lions appear to have been kept in preserves by the Assyrian kings for the purpose of hunting,

as is shown by the Assyrian sculptures, one of which even depicts a lion being let out of a cage. In Palestine itself they lingered down to the time of the Crusaders, and were found about Samaria in the twelfth century; while when Canon Tristram wrote, about half a century ago, they were still common between the Lower Tigris and Euphrates, and occasionally crossed the latter river, though it generally marked the limit of their range to the westward in Asia.

That the Jews of the Old Testament period were well acquainted with the lion's peculiarities is abundantly manifest; the descriptions of his habits in the various texts referring to him are marvellously vivid. Take for example that in the second chapter of the book of the prophet Nahum: "The lion did tear in pieces enough for his whelps, and strangled for his lionesses, and filled his holes with prey, and his dens with ravin." How true to life is this ancient description of the lion as a family provider may be judged by comparing the Hon. W. H. Drummond's account, in the *The Large Game and Natural History of South and South-East Africa*. From a tree this observer watched a lion which had just killed a zebra, "but instead of proceeding to eat it, he got up and roared vigorously until there was an answer, and in a few minutes a lioness, accompanied by four whelps, came trotting up from the same direction as the zebra, which no doubt she had been to drive towards her husband. They formed a fine picture

as they all stood round the carcase, the whelps tearing it and biting it, but unable to get through the tough skin. Then the lion lay down, and the lioness, driving her offspring before her, did the same four or five yards off, upon which he got up, and, commencing to eat, had soon finished a hind-leg, retiring a few yards on one side as soon as he had done so. The lioness came up next and tore the carcase to shreds, bolting huge mouthfuls, but not objecting to the whelps eating as much as they could find. There was a good deal of snarling and quarrelling among these young lions, and occasionally a stand-up fight for a minute, but their mother did not take any notice of them, except to give them a smart blow with her paw if they got in her way." Mr. Drummond nearly succeeded in catching one of these youngsters, which, probably full-fed, had aimlessly wandered up to his tree ; but it scratched and bit so that he was glad to let it go, and take to his tree again to avoid the mother, who, after bumping into the tree in her furious haste and roaring savagely at him, "flew at her offspring, and drove it, yelling at her rough treatment, towards the others." Then "the whole lion family walked quietly away, the lioness leading, and the lion, often turning his head to see that they were not followed, bringing up the rear."

An account given by Oliver St. John in Blanford's *Zoology of Persia*, of his encounter with a lion in that country, is interesting, as one

does not often hear nowadays of lions in Western Asia. In March, 1867, he was travelling on horseback, and entered the oak forest south of Dashtiarjan at sunset, unarmed but for a small revolver. He had indeed been in Persia for three years, and had sought for lions, but found none so far, when now a lion was to find him, for as he was ascending a hill after crossing a rivulet where he had actually often seen their tracks, he found a lioness in his way, which glided out from the trees thirty yards ahead.

He tried to frighten her off by shouting and cracking his hunting-whip, but she charged down and sprang at the horse's throat, but missed her aim. St. John tried to gallop off, not liking to risk merely irritating the brute by a shot from his feeble weapon ; but the terrified horse would not move, until the lioness rushed round and seized his hind-quarters with her fore-paws and teeth, on which he naturally reared and plunged violently, upsetting his rider, who had slipped off, and the lioness as well.

On recovering himself, St. John tried to frighten the lioness, which was still glaring at the escaped horse, by firing over her head. But this only started off the horse, which had not gone far, when the lioness pursued and seized him behind again, and both beasts disappeared into the forest.

St. John, after some natural hesitation, determined very pluckily to follow up his horse, and half a mile on found him safe but wounded,

and drove him on out of the forest into the plain, as he could not be approached owing to his state of terror. He then reached a neighbouring village, and, after a very flea-bitten night in a hut, captured his injured mount next morning ; the horse recovered in a week, though he had one wound two inches deep.

Returning to ancient authorities on the lion, we come to the poems of Homer, which were to the Greeks much what the Bible is with us ; and we find that with Homer the lion, wherever observed, was a familiar animal ; although not mentioned as a man-eater, he is well known as a terrible enemy to cattle and sheep, and is dreaded by the hunters when they meet him unawares. Many beautiful passages describe his ferocity and power, to which the prowess of the heroes in the great war the poet describes are compared. In those I quote I use Lord Derby's fine translation :—

“ Slow as moves a lion from the fold,
Which dogs and youths with ceaseless toil hath worn,
Who all night long have kept their watch, to guard
From his assault the choicest of the herd ;
He, hunger-pinched, hath oft the attempt renewed,
But nought prevailed ; by spears on every side,
And jav'lines met, wielded by stalwart hands,
And blazing torches, which his courage daunt ;
Till with the morn he sullenly withdraws.”

Then, the lion-hunt, almost as described by Colonel Roosevelt :—

“ Fierce as a rav'ning lion, whom to slay
Pour forth the stalwart youths, th' united strength

Of the rous'd village ; he unheeding moves
 At first ; but wounded by a jav'lin thrown
 By some bold youth, he turns, with gaping jaws,
 And frothing fangs, collecting for the spring,
 His breast too narrow for his mighty heart ;
 And with his tail he lashes both his flanks
 And sides, as though to rouse his utmost rage ;
 Then on, in pride of strength, with glaring eyes
 He dashes, if some hunter he may slay,
 Or in the foremost rank himself be slain."

A successful attack by the lion on the herd is thus described :—

"As a lion, in the mountains bred,
 In pride of strength, amid the pasturing herd,
 Seizes a heifer in his powerful jaws,
 The choicest, and her neck first broken, rends,
 And, on her entrails gorging, laps the blood ;
 Though with loud clamour dogs and herdsmen round
 Assail him from afar, yet ventures none
 To meet his rage, for fear is on them all."

Somewhat similarly described is the attack by two lions on a herd-bull, which is overpowered in spite of efforts to save him ; nor are the relations of the lion with other wild animals and with his own kind forgotten—two famished lions are described as fighting over the carcass of a stag ; a lion fights with a boar for the possession of a spring, and bears him down ; and another takes from the jackals the wounded prey these cowardly brutes have worried to death by numbers :—

"As hungry jackals on the mountain side
 Around a stag, that from an archer's hand
 Hath taken hurt, yet while his blood was warm
 And limbs yet serv'd, has baffled his pursuit ;
 But when the fatal shaft has drain'd his strength,

Thirsting for blood beneath the forest shade,
 The jackals seize their victim ; then if chance
 A hungry lion pass, the jackals shrink
 In terror back while he devours the prey."

So familiar was the lion, in fact, that in another passage Homer first uses the simile above given of the lion driven unwillingly from the cattle kraal, and directly afterwards compares his hero of the immediate moment to a stubborn old donkey well whacked by little boys who try to drive him out of a cornfield, both comparisons apparently conveying the same familiar idea to his hearers, while the incongruity of the last with a dignified character does not seem to have struck the poet—all he knew was that his hero was a "stayer," be he like lion or donkey !

Homer's lions were no doubt mostly Asiatic, as the *Iliad*, in which the above and most other lion references occur, treats of the war of Troy ; but they must have been familiar to some of the Greeks in Europe at this time, for there is plenty of evidence that the lion was once a European animal.

Every lover of the beautiful Greek stories knows the tale of Hercules' fight with the Nemean lion, and how the hero always used the lion's skin afterwards as his cloak.

It may be said that Hercules is a solar myth, or something of that sort, and does not count in a scientific connection ; but personally I believe that all these old tales are essentially historical, and even if they were not there is excellent

evidence of the existence of the lion in Europe in times about the events of which there is no such doubt.

When Xerxes, in his great invasion of Greece, had got into Thrace, Herodotus tells us "he marched through the lands of Pæonia and Creston, towards the river Chidorus, which rises in the Crestonian country and flows through the lands of Mygdon to discharge itself into the marsh above the Axius river. And as he marched through this district lions attacked his camels which bore the provisions. For the lions deserted their usual haunts, and came by night, attacking nothing but the camels—neither any other beast of burden nor human being. And I wonder what was the reason why the lions thus left everything else alone and set upon the camels, a kind of beast they had never seen or had experience of. There are, indeed, throughout this country numbers of lions, and wild oxen, whose immense horns are brought into Greece. And the limits of the lions' range are the rivers Nestus, which flows through Abdera, and the Achelous, which flows through Acarnania. For nowhere in the whole of the fore part of Europe eastward of the Nestus could you see a lion, nor in the rest of the continent west of the Achelous; but their haunt is in the tract lying between these two rivers."

Euripides also in his *Alcestis* speaks of Greek lions, though he is writing of the heroic days of

Hercules when he describes lions as among the beasts charmed by the god Apollo :—

“ And downward stalked from Othrys’ wood
The lion troop, fell beasts of blood.”

The reference, although of no particular use as a date, is interesting as showing the Greeks knew that the lion, unlike other felines, sometimes associates in troops ; more than twenty have been seen together in East Africa within last year.

This also makes more credible the following statement of Ælian, who, in the twenty-seventh chapter of the seventeenth book of the *History of Animals* says : “ There used to be a nation in the country of the Libyans, who were called shepherds (*Nomæoi*), who were in possession of a favoured district and one well off for pasturage, and were prosperous generally ; but they ultimately disappeared completely, on account of an invasion by numbers of lions of large size and unconquerable audacity, who destroyed them root and branch until the whole nation was exterminated ; for when lions make an invasion in force nothing can be done to combat them.”

Aristotle mentions the lions in the Thracian district specified by Herodotus, so that, unless he simply took his facts from the earlier writer, they lasted in Europe down to the days of Alexander the Great, whose tutor Aristotle was.

The following story, forming the twenty-first chapter of the third book of Ælian’s zoological

work, is, as it refers to European lions, worth quoting, though rather hard to believe !

“ Eudemus says, that on Mount Pangæus in Thrace a she-bear attacked the lair of a lion, finding it undefended, and killed the cubs, which were still too small to defend themselves. But when the father and mother came home from hunting and saw the slaughter of their children, they were naturally grieved, and rushed to attack the bear ; but she in her fear climbed up a tree with all the speed she could, and sat down, trying to escape their attack. But as they had come there with the express purpose of revenging themselves on their enemy, the lioness thereupon did not leave her post, but sat down at the foot of the tree, glaring up with bloodshot eyes, while the lion, out of his wits with grief, like a man, went wandering over the mountain, till he came upon a woodcutter. The man was frightened and dropped his axe, but the lion fawned on him and reared up and made as much of him as he could, and licked his face with his tongue. So the man began to take a little courage, whereupon the lion curled his tail about him and led him away, but would not let him leave his axe, but made signs to him with his paw to pick it up ; and as the man did not understand, he took it up in his mouth and held it out to him ; and the man followed the lion, who brought him to the tree. The lioness, seeing him, came and fawned on

him herself, and looked to him for compassion, and glared up at the bear. So the man came to the conclusion that she had done some harm to the lions, and set to work with all his might to cut down the tree ; it fell, and the bear was flung out, and the beasts tore her to pieces ; then the lion took back the man safe and sound to the place where he had first met him, and left him to his original occupation of cutting wood."

The fact is, the ancients were evidently so much impressed with the disposition of the lion, which is certainly a more amiable animal than most wild beasts, when tamed, that they formed very idealized impressions of his character ; for instance, Ælian devotes the first chapter of the third book of his *History of Animals* to an account of the extreme amiability of the lions of Mauretania.

" The lion," he says, " is the Moor's travelling companion, and drinks from the same spring as he. I hear, also, that the lions go to the houses of the Moors, when they have had bad luck in hunting and are hard pressed by hunger ; and if the master of the house is at home, he sends the lion about his business and chases him away by force ; but if he is away, and his wife is at home alone, she checks the beast's advances by suitable remonstrances, and keeps him in his place, admonishing him to restrain himself, and not let his hunger drive him frantic. Now, the

lion understands the Moorish language, and the Moors say that this is the substance of the woman's reproaches to the beast: 'Are you not ashamed, you, the lion, the king of the beasts, to come to my hut, and beg food from a woman, and look to a woman for the pity and sympathy you need, like a cripple; you, who ought to rove the mountains and fall upon stags and hartebeests, and other prey that is fit food for lions; but you like better to beg, like a miserable little cur.' Thus does the lady of the house rate him; and he, as if cut to the heart, and thoroughly ashamed of himself, sneaks off quietly and with downcast countenance, quite subdued by the arguments of reason. Now, when horses and dogs understand and fear human abuse because of their close association with us, I should not be surprised that the Moors, who are on terms of friendly intimacy with lions, and brought up with them, should be understood by the animals. For the Moors say that they treat the lions' cubs in the same way as their own children, in board and bed and house; and from this it is not incredible or absurd that the beasts should understand the language I have spoken of above."

Far removed as is the modern Red Indian from the ancient Mauretania in every way, it is interesting to find him with the same idea about the susceptibility of animals to reason-

able remonstrance, as evinced by the following anecdote told by Richardson :—

“ Reskarrah, an aged Indian, was seated at the door of his tent, pitched by a small stream not far from Fort Enterprise, when a large bear came to the opposite bank, and remained for some time surveying him. Reskarrah considered himself in great danger ; and having no one to assist him but his aged wife, made a speech to the following effect : ‘ O bear ! I never did you any harm ; I have always had the highest respect for you and your relations, and never killed any of them except through necessity. Go away, good bear, and let me alone, and I promise not to molest you.’ The bear walked off ; and the old man, fancying that he owed his safety to his eloquence, favoured us, on his arrival at the fort, with his speech at length.”

The most celebrated of all these tales about the friendly relations of lions and men is the story of Androcles, who was a young slave of a Roman senator, and, to escape punishment for some offence or other, had run away, got to Africa, and betaken himself to the desert.

Here, when trying to escape from the burning heat of the sun, he went into a cave, which happened to be the den of a lion. Presently the lion came home from hunting, in a state of great affliction, because a sharp

splinter had run through his paw; when he saw Androcles he showed no ferocity, but was conciliating in his manner, held out his paw, and as plainly as he could asked for the splinter to be extracted. At first Androcles had given himself up for lost, but after he saw how gentle the beast was, and understood how his foot was hurting him, he pulled out the splinter that was the cause of the trouble, and relieved the animal. The lion, delighted with this kind service, treated him as his friend and guest, and shared with him the game he brought home, each dealing with the meat after his own fashion, for Androcles cooked his share, while the lion naturally preferred to have his rations raw.

In this way Androcles lived with the lion for three years; ultimately, however, he left his feline friend and tempted fortune again, for the unromantic reason, so Ælian says, that as he had not washed or properly looked after his person at all he was troubled by intolerable itching. This, no doubt, would be simply the result of living too exclusively on meat, and that in a hot climate, so the fact is reasonable enough, though the reason Ælian gives may not be sufficient, for washing is often neglected without any very terrible results by natives, even in hot climates.

Presently, however, he was captured, detected as a runaway slave, and sent back in chains to Rome. Escape for a slave in those days was far

more difficult than it was for the much-pitied negroes of the United States half a century ago, who had only to get over the British border. A Roman slave could do nothing but flee to those remote lands where Rome did not rule, whose inhabitants would probably be no kinder than his master ; or, like Androcles, take to the wilds.

His master accused him of the crime from the punishment of which he had fled, and he was condemned to be killed by wild beasts in the arena.

It so happened that his friend the lion had had the same bad luck as himself, and by chance had been sent to the capital to help to make the proverbial Roman holiday. So it came to pass that the former messmates met again on the sand of the arena ; Androcles, whose wits were probably confused by terror, did not recognize the lion at first, but the beast, whose scent no doubt came to his aid, knew him immediately, and fawningly threw himself at his feet. Androcles then recognized his old host, and gladly embraced him—the only friend he had in the world.

The impression this scene made on the spectators was simply that Androcles must be a wizard ; so a leopard was loosed on him as well as the lion ; this beast was ready enough to attack him, but the lion, remembering his ties to his benefactor and guest, soon stopped this by tearing the leopard to pieces.

This time the hardened onlookers were at last impressed seriously, and the giver of the show made inquiries of Androcles and learnt from him the whole of the circumstances. The report naturally went round the audience, and when the facts were generally known, there was a cry for the release of both man and beast. They appear afterwards to have made a living by going about, Androcles leading the lion and telling the story.

This leading of tame lions was quite a common custom in classical and mediæval times, and went on quite recently in Persia, for St. John, in the work already quoted, says: "The lútis or mountebanks of Persia are often accompanied by a captive lion, trained to eat a joint of mutton off the chest of a boy, who throws himself down on his back. It is not a pleasant exhibition, the child being generally much alarmed. I once asked a Shiraz lúti which took the most thrashing to learn his part, the lion or the boy; but a grin was the only answer vouchsafed."

To such a caricature have the ghastly exhibitions of men massacred by lions in the Roman arena descended: the numbers of these beasts which could be procured in the days of Roman dominion may be judged of by the statement of Pliny, who says that Sulla "gave a fight of one hundred lions with manes." After him, Pompey the Great exhibited six hundred lions in the Circus, three hundred and

fifteen of which had manes ; Cæsar, the Dictator, exhibited four hundred.

Of course, the Romans had all North Africa to draw upon for their lions, and the lion, though now very rare there, is not even yet extinct, nor is it in South Africa, except in the region south of the Orange River. In India the lion does not appear ever to have ranged beyond the central portion ; but it has disappeared from most of its territory in that country, although as late as 1864 one was killed only twenty-five miles west of Allahabad, and the last survivors of the race, now preserved, still inhabit the Gir Forest of Kattywar.

Over most of Africa the lion still holds his ground, and is a great deal more common than is appreciated by stock-owners ; in Portuguese East Africa, only last year, twenty pounds was the reward offered for killing a lion.

Moreover, the reputation of the lion as a terrible foe to man has been completely confirmed very recently in East Africa, and a most thrilling account of the doings of a couple of man-eaters has been given by Lieut.-Colonel J. H. Patterson, who killed both of them, in his book *The Man-eaters of Tsavo*, from which I take the following details.

These beasts made a speciality of preying upon the Indian coolies who had been brought over to work on the Uganda railway, then in process of construction, and so terrible were their ravages that "in December, 1898," says

the colonel, "they actually succeeded in bringing the railway works to a complete standstill for three weeks."

They improved in skill with practice, and became ultimately absolutely reckless in their daring attempts to obtain their human food. In fact, when Colonel Patterson had at length succeeded in shooting them it was found that the hides of both were somewhat disfigured by scratches scored on them by the thorns of which the bomas, or enclosures, in which the poor, terrified coolies entrenched themselves, were made. One poor wretch was even dragged into the bushes and left sticking there, so terribly mangled that when he was rescued he died before he could be got to hospital.

It would hardly be fair to the author of the book, whose heroism in shooting these terrible beasts was, one is glad to hear, fully appreciated by the poor coolies who were being made the food of devils, as they called their destroyers, to go more fully into the details of these tragedies; the work is one which everyone interested in the relations of man and beast ought to read for themselves; but it might be mentioned that the human "bag" of these two lions—both males and without manes, though of full size—amounted to "no less than twenty-eight Indian coolies, in addition to scores of unfortunate African natives of whom no official record was kept." Although some Europeans had very narrow escapes from these

lions, no white man was actually killed by them, but the tragic death of Mr. Ryall, who was taken out of a shunted railway-carriage in which he was sleeping with two companions, by another man-eater in the same part of Africa, is a tragedy that merits a passing mention.

It was in East Africa, only a few years before these occurrences—in 1892, in fact—that I came as near meeting wild lions myself as I ever want to do. In those days Mombasa itself, ancient port though it is, was little touched by European civilization as yet; on Mombasa Island itself and English Point on the mainland across the harbour, there were only a score or so of Europeans altogether.

One day there was an invasion of lions at English Point, which resulted in the death of a cow; two sportsmen endeavoured to retaliate by “sitting up” for him in a tree, but with no luck for the time, at all events; as a dinner-party was in progress about twenty yards off “there was a sound of revelry by night,” I expect, which may have warned his feline majesty. I had been staying at a bungalow on English Point only a few days before, and had thought nothing of going about outside it at night, though one had to be on the look-out for puff-adders, and it was usual to carry a lantern.

The natives reasonably enough objected to the neighbourhood of lions, and left for the island, where I was then staying; but I

distinctly remember that there was a rumour that a lion or two had swum across the harbour—not at all an unreasonable feat, for lions swim well and fairly readily, and the distance was not great—to investigate the island. I happened to be going up from Mombasa town that night to dine at Kilindini, a small settlement at the opposite end of the island, which is only about two miles long. The mode of transit then was, and still is, I believe, by a trolley propelled by niggers, on a little line of rails, and it struck me that one would be unpleasantly near any lion which might be inclined to try man-eating. However, as our justly popular Bishop, Dr. Tucker, was one of the party, I consoled myself with the reflection that I had never heard of a lion eating a bishop, and as a matter of fact no lion put in an appearance ; but I may mention that even on this small island there were hyænas, for I often heard them ; and I have seen monkeys by day and the large white-tailed mongoose, whose tail was curiously conspicuous, at night, so that we had a fair share of wild beasts of a small kind.

The tiger has never been so familiar as the lion, and the ancients did not know much about it, and got hold of some very exaggerated ideas on the subject of its habits and capacities. Arrian, writing on India in the third century B.C., says : “ The Indians think the tiger a great deal stronger than the elephant. Nearchus

says he saw the skin of a tiger, but did not see the beast itself, and that the Indians assert the tiger to be as big as the biggest horse; whilst in swiftness and strength there is no creature to be compared to him. And when he engages the elephant he springs on its head, and easily throttles it. Moreover, the creatures which we have seen and call tigers are only jackals which are dappled, and of a kind bigger than ordinary jackals." Yule and Burnell, from whose encyclopædic work *Hobson Jobson* I take this and other tiger quotations, suggest that the "jackal" is a hyæna. The word translated "dappled" may just as well mean striped, for it is applied to anything variegated, so that the striped hyæna is probably the kind meant, and this was a fairly well-known animal to the ancients.

Passing off a hyæna as a tiger sounds very like a showman's trick, but it would be interesting to know what sort of beast did duty for the frightful *martichora*, which Calpurnius, who lived in the time of Nero, says he actually saw in the arena, along with a mixed collection, which shows how very enterprising the Romans were in the accumulating of menagerie specimens for the brutal purpose of butchery—or of butchering each other or human beings. For Calpurnius mentions white hares, which would have come from the Alps, oxen with manes and others with humps—the bison of Germany and the zebu of India—and horned boars, which

could only be the babirusa, a beast never known to have occurred farther west than Celebes, though the ancients said it came from "India," as no doubt it did by way of trade. Now, he does not go into details about the mantichora, and yet it must have been worth looking at if it was at all like the account given.

Ælian thus describes it in the twenty-first chapter of his fourth book on the *History of Animals*: "In the Indians' country there is an animal of prodigious strength, larger than the largest lion, with its skin as red as cinnabar, and hairy like a dog's, which is called in the Indian language martichoras; its face resembles that of a human being, not a beast's; its teeth, in both the upper and lower jaws, are set in three rows, very sharp at the point, and larger than dogs' teeth; the ears are like human ears in shape, but larger and hairier; and the eyes are blue, and these also are human in appearance; but the feet and claws seem to me like those of a lion; at the end of its tail it has a scorpion's sting, which may be over a cubit long, and the rest of its tail is set on either side with spines; the tip of the tail inflicts a wound which is fatal, and that speedily. And if the beast is hunted by anyone, it lets fly the spines at the side of the tail like darts, and can strike at a long distance; and when it lets fly its spines in front, it bends its tail forward, but when shooting to the rear in Parthian fashion, it stretches the tail out. These spines

are fatal to everything they strike, excepting only the elephant ; and they are a foot long and of the thickness of a rush. Now Ctesias says, and says that the Indians say so too, that fresh spines grow up in the spots whence the others have been cast, so that the animal's power of working mischief is continuous. And, as the same writer says, the beast especially likes human flesh, and does not lie in wait for single victims, but attacks two or three at a time, and gets the best of them single-handed. And it can overcome the other animals, but not the lion. This beast's name bears witness to its fondness for human flesh, for its Indian name means ' Man - eater ' (Anthropophagus) in Greek, and it is so called from its habits. In swiftness it equals the hind. The Indians hunt the cubs of these brutes before they have developed the spines on the tail, and bruise this member with a stone to prevent its developing them. The voice is very similar to the blast of a trumpet. Ctesias says that he saw this animal in Persia, where it had been sent as a gift to the king, if one can take the Cnidian writer's testimony on such matters." Ctesias was evidently regarded even by the ancients as a bit of a Munchausen, and Pausanias, a very careful writer, puts down this fearful monster as simply a common tiger.

His criticism is very interesting ; he says, as translated by Dr. Frazer, in the twenty-first chapter of the ninth book of his *Description of*

Greece: “Ctesias, in his description of India, mentions a beast which he says is called *martichoras* by the Indians, and ‘man-eater’ by the Greeks. I believe it is the tiger. That it has three rows of teeth on each jaw and prickles at the tip of the tail, and that it defends itself with these prickles at close quarters, and hurls them at its foes at a distance like the arrows of an archer; all this seems to me to be a false report which circulates amongst the Indians owing to their excessive fear of the beast. They were deceived also in respect of its colour; for when they saw the tiger in the sunlight it seemed to them to be red all over, either by reason of its speed, or, if it were not running, on account of its constantly turning about, especially if they did not see the beast near.”

Other passages in the classics exemplify the belief that the ancients had in this supposed extraordinary speed of the tiger. Pliny says: “Hyrcania and India produce the tiger, an animal of tremendous swiftness, a quality which is more especially tested when we deprive it of all its whelps, which are always very numerous. They are seized by the hunter, who lies in wait for them, being provided with the swiftest horse he can possibly obtain, and which he frequently changes for a fresh one. As soon as the female finds her lair empty—for the male takes no care whatever of his offspring—headlong she darts forth, and

traces them by the smell. Her approach is made known by her cries, upon which the hunter throws down one of the whelps; this she snatches up with her teeth, and more swift, even, under the weight, returns to her lair, and then again sets out in pursuit; and this she continues to do, until the owner has reached his vessel, while the animal vainly vents her fury on the shore." There are some true touches in this very sensational account; although the tiger is not so very prolific, and is not particularly remarkable for speed, it is true that the male does not take an interest in his family as we have seen the lion does, and the locality Pliny calls Hyrcania—the southern shore of the Caspian Sea—is still inhabited by tigers. In fact, the tiger is not a specially Indian animal at all, but ranges over a very large part of Asia, including Persia, Southern Siberia, and even the cold island of Saghalien, as well as India and the other hot lands beyond it as far as Sumatra.

Although exhibited in Rome as early as Augustus' time, and again in that of Claudius, it was never common, and in the Middle Ages so dropped out of knowledge that Europeans forgot what it was like, and did not know it when it was again seen, but called it a kind of lion.

Marco Polo, for instance, in 1298, says of Kubla Khan's trained hunting tigers: "He has several huge lions . . . they have a very

beautiful coat and very beautiful colour, for they are striped all along, black and red and white." Nearly two hundred years later, in 1474, we find Josepha Barbaro again speaking of the tigress as a "leonza," or lioness, and saying "she is like unto a lyonesse ; but she is red-coloured, streaked all over with black strykes ; her face is redde with certain white and blacke spottes, the bealy white, and tayled like the lyon ; seeming to be a marvailouse fiers beast."

The mediæval writers were fully impressed with the tiger's rapacity, and, indeed, as it certainly takes to man-eating more readily than any other of the great cats, to say nothing of the enormous amount of damage it does among cattle and other stock, it must in all ages have been one of the most serious foes man has ever had to contend with, although, like most ferocious carnivora, very much worse in former times than it is now.

Barros, writing in 1553, says : " Beginning from the point of Cingapura and all the way to Pulloçambilam, i.e. the whole length of the kingdom of Malaca . . . there is no other town with a name except this City of Malaca, only some havens of fishermen, and in the interior a very few villages. And indeed the most of these wretched people sleep at the top of the highest trees they can find, for up to the height of 20 palms the tigers can seize them at a leap ; and if anything saves the poor people from these

beasts it is the bonfires they keep burning at night, which the tigers are much afraid of. In fact, these are so numerous that many come into the city itself at night in search of prey. And it has happened, since we [the Portuguese] took the place, that a tiger leapt into a garden surrounded by a good high timber fence and lifted a beam of wood with three slaves who were laid by the heels, and with these made a clean leap over the fence."

Colonel Yule reasonably enough characterizes this last detail of tigerish rapacity as "a Munchausen-like story," but that is no reason for altogether disbelieving the account given of the abundance and audacity of the tigers, which are still very numerous and destructive in the East Indies.

In Flower and Lydekker's valuable manual on *Mammals Living and Extinct*, it is stated that "according to one of the administrative reports of Java laid before the Dutch Chambers, portions of that island are being depopulated through tigers. In 1882 the population of a village in the south-west of the Bantam province was removed and transferred to an island off the coast in consequence of the trouble caused to the people by tigers. These animals have now become an intolerable pest in parts of the same province. The total population is about 600,000, and, in 1887, sixty-one were killed by tigers, and in consequence of the dread existing among the people, it has been proposed to

deport the inhabitants of the villages most threatened to other parts of the country where tigers are not so common, and where they can pursue their agricultural operations with a greater degree of security. At present they fear to go anywhere near the borders of the forest. The people seem disinclined, or they lack the means and courage, to attack and destroy their enemy, although considerable rewards are offered by Government for the destruction of beasts of prey. In 1888 the reward for killing a royal tiger was raised to two hundred florins. It appears also that the immunity of the tiger is in part due to superstition, for it is considered wrong to kill one unless he attacks first or otherwise does injury."

In Sumatra matters were about this time pretty well as bad, apparently; for in the *Royal Natural History*, edited by Mr. Lydekker, we find it stated that "a firm of Dutch merchants at Padang, Sumatra, writing in the autumn of 1891, stated that the arrivals of coffee from the interior were much below the usual average, on account of the number of tigers infesting the route; upwards of fifty men having been killed by them while engaged in bringing the coffee down-country." In India, too, only last year, as recorded in a letter to the *Field*, seven people were killed by tigers within two hundred miles of Calcutta itself.

The leopard, although not nearly so often mentioned, was as familiar in ancient times as

the lion ; it is often mentioned in the Bible and the classics, and was one of the regular exhibition animals in the Roman games. Cicero, when Proconsul of Cilicia in Asia Minor, was worried by his friend Cælius, then Quæstor at Rome, to get him leopards for the arena. He writes rather jocularly from Laodicea in reply. I quote the translation given in M. Loisel's work on Menageries : " I am having panthers diligently looked out for you by hunters who are accustomed to this work ; but very few are to be found, and they make out that the few that there are complain of being the only creatures for which traps are set in my province ; so, it is said, they have resolved to emigrate into Caria. They are still being carefully sought for, and Patiscus is making a speciality of this matter. All that can be found shall be kept for you, but I do not know how many have been caught up to the present."

The leopard still exists in this part of Asia ; in fact, it still holds all its ancient territory, which is wider than that of either the lion or the tiger, not only including Western and South-Western Asia, but the whole of Africa. It is doubtful whether it ever inhabited Europe in historical times ; at any rate Aristotle, after mentioning the Thracian lions, expressly says there are leopards in Africa, but not in Europe. It is a very hard animal to extirpate compared with the two great Old World cats, for owing to

its stealthy and secretive habits, and its power of climbing, it is seldom seen, and often exists unsuspected quite close to large towns; there was a rumour of one in the suburbs of Calcutta when I lived there ten years ago. It is a thorough pest to humanity by its destructiveness to stock, and though it comparatively rarely takes to man-eating, it is a more terrible beast than the lion or tiger when it does do so, owing to its crafty ways. Its speed is also really remarkable, at any rate for the short rush of its charge, and perhaps the ancients got their ideas of the swiftness of the tiger by mixing it up with the leopard, with a touch of the harmless cheetah or hunting-leopard, which is really the swiftest thing on earth for a quarter-mile dash, thrown in. The popular confusion between tigers and leopards still goes on, for the leopard is called tiger in South Africa, as is the leopard-like jaguar, the third largest of the cats, in South America. The prowess of the leopard as a man-eater is well exemplified by the well-attested modern case now to be given.

Sterndale, in his *Mammalia of India*, gives an account of this beast, which, until a tiger recently lowered his record, was the worst man-eater known—the celebrated leopard, or pard as Sterndale, who discriminates between pards and panthers, calls it—of the Seeonee district. This beast's career of crime was run in the troublous days of the Indian Mutiny, which was the reason why he had the chance of

developing his man-eating propensities to such a terrible extent.

The radius of his man-hunting range is put by Sterndale at eighteen miles, and no one within this district knew when and where he might turn up ; like all man-eaters, he was very cunning, and he would kill in villages as well as in the open, by day as well as by night. In accordance with the bloodthirsty nature of his race, he would kill unnecessarily, or only to suck the blood of his prey, and three human lives have been known to be sacrificed to his rapacity in one night.

He was timid as well as fierce, for single people have been known to have scared him from his kill ; in one instance a poor woman clung to her husband, whom the spotted fiend had seized by the throat in the usual leopard fashion, and though the poor victim succumbed to this deadly grip, the body was left to the widow by the beast, and neither she nor her child were hurt by him.

The whole district was naturally terrorized by this pest, and no one knowing the superstition rampant among the natives of India even to-day will be surprised that the beast was considered to be something supernatural—a were-leopard, in fact, a malignant human spirit in bestial form. The identical man whose soul had inspired the body of the beast was supposed locally to be known. He was one Chinta, a Gond aborigine, known previously as a

wizard and werewolf, or at any rate reputed to be such by his superstitious neighbours, who told how on one occasion he changed himself into a leopard before his wife, in order to kill a nilghai for meat, and how she was so frightened when he came to her for the root, which he had given her to keep for him as the charm restoring him to human shape, that she fled in terror, throwing away the charm. The man-leopard, failing to find it, embarked on a career of man-slaughtering, in which the unhappy wife was the first victim !

This tradition was quite enough to intimidate the native hunters, and the killing went on until over two hundred lives had been lost, and this in the short space of three years. Sterndale himself, in 1857, had tried to kill the animal, and had actually seen it more than once during a beat ; but this was in the beginning of the man-eater's career, and, thinking naturally enough that the beast which had just killed a man must be a tiger, he reserved his fire, and allowed the supposedly harmless leopard to escape. In the end a native " shikari " got the beast after all, and by an accident, for he did not know what he was firing at, and thought his mark was some kind of edible game-beast. Forsyth, in his *Highlands of Central India*, also gives an account of this historical man-eater, but puts the number of victims at " nearly a hundred " only ; but this work is earlier than that of Sterndale by a good many

years, so that the large number above-mentioned can be taken as correct, and is quoted by Blanford in his *Fauna of British India*.

Pards and panthers, by the way, are not now recognized as distinct species, but only as varieties of the same beast, the leopard; panther, a classical name like pard, meaning simply "the universal hunter," a very appropriate name for a beast which will, as Blanford says in his account of it, "strike down an ox or bound upon a sparrow."

In captivity the leopard is much more dangerous than the lion, and though it was sometimes kept about houses in the Middle Ages, as well as the cheetah—still occasionally used as a hunting animal in the East—there have been several cases of people having been killed by these presumably domesticated pets. But there is one very remarkable case of a really tame leopard which deserves quoting at length, not only as a record of individual amiability in one of the most dangerous animals, but as an unrivalled record of the doings of a reformed carnivore; it was given by Mrs. Bowdich in *Loudon's Magazine* so many years ago, that though republished more than once, it will be new to many.

"I am induced," says the authoress, "to send you some account of a panther which was in my possession for several months. He and another were found, when very young, in

the forest, apparently deserted by their mother. They were taken to the King of Ashantee, in whose palace they lived several weeks ; when my hero, being much larger than his companion, suffocated him in a fit of romping, and was then sent to Mr. Hutchison, the resident left by Mr. Bowdich at Coomassie. This gentleman, observing that the animal was very docile, took pains to tame him, and in a great measure succeeded. When he was about a year old, Mr. Hutchison returned to Cape Coast, and had him led through the country by a chain, occasionally letting him loose when eating was going forward, when he would sit by his master's side, and receive his share with comparative gentleness. Once or twice he purloined a fowl, but easily gave it up to Mr. Hutchison on being allowed a portion of something else. On the day of his arrival, he was placed in a small court leading to the private rooms of the Governor, and, after dinner, was led by a thin cord into the room, where he received our salutations with some degree of roughness, but with perfect good-humour. On the least encouragement, he laid his paws upon our shoulders, rubbed his head on us, and his teeth and claws having been filed, there was no danger of tearing our clothes. He was kept in the above court for a week or two, and evinced no ferocity, except when one of the servants tried to pull his food from him ; he then caught the offender by the leg, and tore out a small

piece of flesh ; but he never seemed to owe him any ill-will afterwards. He one morning broke his cord, and, the cry being given, the castle gates were shut, and a chase commenced. After leading his pursuers two or three times round the ramparts, and knocking over a few children by bouncing against them, he suffered himself to be caught, and led quietly back to his quarters, under one of the guns of the fortress. By degrees the fear of him subsided ; and orders having been given to the sentinels to prevent his escape through the gates, he was left at liberty to go where he pleased ; and a boy was appointed to prevent him from intruding into the apartments of the officers. His keeper, however, generally passed his watch in sleeping ; and Sai, as the panther was called, after the royal giver, roamed at large. On one occasion, he found his servant sitting on the step of the door, upright, but fast asleep, when he lifted his paw, gave him a blow on the side of his head, which laid him flat, and then stood wagging his tail as if enjoying the mischief he had committed. He became exceedingly attached to the Governor, and followed him everywhere like a dog. His favourite station was at a window of the sitting-room, which overlooked the whole town ; there, standing on his hind-legs, his fore-paws resting on the ledge of the window, and his chin laid between them, he appeared to amuse himself with what was passing beneath.

The children also stood with him at the window ; and one day, finding his presence an incumbrance, and that they could not get their chairs close, they used their united efforts to pull him down by the tail. He one morning missed the Governor, who was settling a dispute in the hall, and who, being surrounded by black people, was hidden from the view of his favourite. Sai wandered with a dejected look to various parts of the fortress, in search of him ; and, while absent on this errand, the audience ceased, the Governor returned to his private rooms, and seated himself at a table to write. Presently he heard a heavy step coming up the stairs, and, raising his eyes to the open door, he beheld Sai. At that moment he gave himself up for lost ; for Sai immediately sprang from the door on his neck. Instead, however, of devouring him, he laid his head close to the Governor's, rubbed his cheek on his shoulder, wagged his tail, and tried to evince his happiness. Occasionally, however, the panther caused a little alarm to the other inmates of the castle, and the poor woman who swept the floors, or, to speak technically, the *fra-fra* woman, was made ill by her fright. She was one day sweeping the boards of the great hall with a short broom, and in an attitude nearly approaching to all-fours, and Sai, who was hidden under one of the sofas, suddenly leaped on her back, where he stood in triumph. She screamed so violently as to

summon the other servants ; but they, seeing the panther, as they thought, in the act of swallowing her, one and all scampered off as quickly as possible ; nor was she released till the Governor, who heard the noise, came to her assistance. Strangers were naturally uncomfortable when they saw so powerful a beast at perfect liberty ; and many were the ridiculous scenes which took place ; they not liking to own their alarm, yet perfectly unable to retain their composure in his presence.

“ This interesting animal was well fed twice every day, but never given anything with life in it. He stood about two feet high, and was of a dark yellow colour, thickly spotted with black rosettes ; and, from the good feeding, and the care taken to clean him, his skin shone like silk. The expression of his countenance was very animated and good-tempered, and he was particularly gentle to children. He would lie down on the mats by their side when they slept, and even the infant shared his caresses, and remained unhurt. During the period of his residence at Cape Coast, I was much occupied by making arrangements for my departure from Africa ; but generally visited my future companion every day, and we, in consequence, became great friends before we sailed. He was conveyed on board in a large wooden cage, thickly barred in the front with iron. Even this confinement was not deemed a sufficient protection by the canoe-

men, who were so alarmed at taking him from the shore to the vessel, that, in their confusion, they dropped cage and all into the sea. For a few minutes I gave up my poor panther as lost ; but some sailors jumped into a boat belonging to the vessel, and dragged him out in safety. The beast himself seemed completely subdued by his ducking ; and as no one dared to open his cage to dry it, he rolled himself up in one corner, nor roused himself till after an interval of some days, when he recognized my voice. When I first spoke, he raised his head, held it on one side, then on the other, to listen ; and when I came fully into his view, he jumped on his legs, and appeared frantic ; he rolled himself over and over, he howled, he opened his enormous jaws, and cried, and seemed as if he would have torn his cage to pieces. However, as his violence subsided, he contented himself with thrusting his paws and nose through the bars of the cage, to receive my caresses.

“The greatest treat I could bestow upon my favourite was lavender-water. Mr. Hutchison had told me that on the way from Ashantee, he drew a scented handkerchief from his pocket, which was immediately seized on by the panther, who reduced it to atoms ; nor could he venture to open a bottle of perfume when the animal was near, he was so eager to enjoy it. I indulged him twice a week by making a cup of stiff paper, pouring a little

lavender-water into it, and giving it to him through the bars of his cage ; he would drag it to him with great eagerness, roll himself over it, nor rest till the smell had evaporated. By this I taught him to put out his paws without showing his nails, always refusing the lavender-water till he had drawn them back again ; and in a short time he never, on any occasion, protruded his claws when offering me his paw.

“ We lay eight weeks in the River Gaboon, where he had plenty of excellent food, but was never suffered to leave his cage, on account of the deck being always filled with black strangers, to whom he had a very decided aversion, although he was perfectly reconciled to white people. His indignation, however, was constantly excited by the pigs, when they were suffered to run past his cage ; and the sight of one of the monkeys put him in a complete fury. While at anchor in the before-mentioned river, an orang-outang (*Simia satyrus*) was brought for sale, and lived three days on board ; and I shall never forget the uncontrollable rage of the one, or the agony of the other, at this meeting. The orang-outang [this was no doubt a chimpanzee, an animal which was long confused with the more early known orang of the East] was about three feet high, and very powerful, in proportion to his size ; so that when he fled with extraordinary rapidity from the panther to the further end of the deck, neither men nor

things remained upright when they opposed his progress : there he took refuge in a sail, and although generally obedient to the voice of his master, force was necessary to make him quit the shelter of its folds. As to the panther, his back rose in an arch ; his tail was elevated, and perfectly stiff ; his eyes flashed, and, as he howled, he showed his huge teeth ; then, as if forgetting the bars before him, he tried to spring on the orang-outang, to tear him to atoms. It was long before he recovered his tranquillity ; day and night he appeared to be on the listen ; and the approach of a large monkey we had on board, or the intrusion of a black man, brought a return of his agitation. We at length sailed for England, with an ample supply of provisions ; but, unhappily, we were boarded by pirates during the voyage, and nearly reduced to a state of starvation. My panther must have perished but for a collection of more than three hundred parrots, with which we sailed from the river, and which died very fast when we were in the north-west trades. Sai's allowance was one per diem ; but this was so scanty a pittance, that he became ravenous, and had not patience to pick off the feathers before he commenced his meal. The consequence was, that he became very ill, and refused even this small quantity of food. Those around him tried to persuade me that he suffered from the colder climate ; but his dry nose and paw convinced me he was feverish,

and I had him taken from the cage ; when, instead of jumping about and enjoying his liberty, he lay down, and rested his head upon my feet. I then made three pills, each containing two grains of calomel. The boy who had the charge of him, and who was much attached to him, held his jaws open, while I pushed the medicine down his throat. Early the next morning, I went to visit my patient, and found his guard sleeping in the cage ; and having administered a further dose to the invalid, I had the satisfaction of seeing him perfectly cured in the evening. On the arrival of the vessel in the London Docks, Sai was taken ashore, and presented to the Duchess of York, who placed him in Exeter Change (then a menagerie) to be taken care of till she herself went to Oatlands. He remained there for some weeks, and was suffered to roam the greater part of the day without any restraint. On the morning previous to the Duchess's departure from the town, she went to visit her new pet, played with him, and admired his healthy appearance and gentle deportment. In the evening, when her Royal Highness's coachman went to take him away, he was dead, in consequence of an inflammation on his lungs."

The remarkable gentleness of this specimen rather reminds one of the puma, which, in captivity at least, has shown itself the most harmless of the great cats ; as an important

carnivore in America, and an animal with a remarkably wide range, from Canada to Patagonia, it deserves some notice.

When the first colonizers of America came across pumas, they naturally thought they were lions, or rather lionesses, since they never saw any maned specimens. Thus Adrian van der Donck, quoted by Mr. F. W. True in the *Report of the United States National Museum* for 1889, says, in 1656: "Although the New Netherlands lay in a fine climate, and although the country in winter seems rather cold, nevertheless lions are found there, but not by the Christians, who have travelled the land wide and broad and have not seen one. It is only known to us by the skins of the females, which are sometimes brought in by the Indians for sale; who on inquiry say that the lions are found far to the south-west, distant fifteen or twenty days' journey, in very high mountains, and that the males are too active and fierce to be taken." Garcilasso de la Vega also spoke of the "lions" in Peru, though he noted that they were not so large and fierce as the African lions. Still, there is no doubt that the puma in those early days was at least pretty nearly as bad as the leopard of the Old World, which it so closely resembles in size, form, and habits, and, like that beast, occasionally turned man-eater, and was very dangerous when brought to bay.

Catesby, writing of the puma in Carolina, in

1743, says that when the hunter approaches to shoot a puma which has been treed by his dog he does so "with no small danger to himself, for descending furiously from the tree, he (the puma) attacks the first in his way, either man or dog, which seldom escape alive."

Mr. Murtrie, in his notes in Cuvier's *Animal Kingdom*, mentions in the case of the puma "that this animal, our common panther, does not always confine itself to sheep. It is well known, and has lately been proved, January, 1830, by an unprovoked attack upon an unfortunate woman in Pennsylvania. The ferocious brute seized upon her as she was passing along the road, and killed her in an instant."

Rather earlier than this, apparently, a more remarkable case occurred, as the victim was in this instance a strong and well-armed man; it is thus given by Colonel Roosevelt in his account of the cougar—as the puma is often called in North America—in *Hunting Trips of a Ranchman*. "Early in the present century" (the nineteenth), he says, "one of my ancestral relatives, a Georgian, moved down to the wild and almost unknown country bordering on Florida. His plantation was surrounded by jungles in which all kinds of wild beasts swarmed. One of his negroes had a sweetheart on another plantation, and in visiting her, instead of going by the road he took a short cut through the swamps, heedless of the wild beasts, and armed only with a long knife—for

he was a man of colossal strength, and of fierce and determined temper. One night he started to return late, expecting to reach the plantation in time for his daily task on the morrow. But he never reached home, and it was thought he had run away. However, when search was made for him his body was found in the path through the swamp, all gashed and torn, and but a few steps from him the body of a cougar, stabbed and cut in many places. Certainly that must have been a grim fight, in the gloomy, lonely recesses of the swamp, with no one to watch the midnight death-struggle between the powerful, naked man and the ferocious brute that was his almost unseen assailant."

Taking into consideration the fact that the puma is also a serious pest to stock-owners, destroying sheep wholesale, and doing great damage to colts, calves, and hogs, the first of which are its favourite prey, it can only be regarded as a matter for congratulation that, in North America it has been so far got rid of, that Mr. True, in the paper above quoted, says that "in many of the more thickly populated States it is improbable that even stragglers could be found to-day," although Mr. Roosevelt says it never attacks man nowadays. Mr. W. H. Hudson, writing of its ways in Argentina, also gives it a good character for harmlessness; in fact, he quotes several instances to show a positive tendency to friendliness to

man, and says the gauchos call it the only friend of man among the wild animals. It has even been credited with defending man against the jaguar, which, as above remarked, passes as the tiger in tropical America. Be that as it may, farther south it is a more dangerous beast. Musters, in his book on life among the Patagonian Islands, says it will attack a man on foot, and Mr. Hesketh Prichard, in his much more recent work dealing with the same country, confirms the report of this propensity.

V

ANIMAL RIVALS, CONTINUED; ANIMAL ALLIES

WE early make the acquaintance of the bear as a neighbour and enemy of man from its frequent mention in the Old Testament in that character. Of course the best-known instance is the attack by the two she-bears on the naughty little boys who shouted after the prophet Elisha, "Go up, thou baldhead": "there came forth two she-bears out of the wood and tore forty and two of them." This is grotesquely embellished, for the more complete horrification of naughty little English boys, in the poems of Jane and Ann Taylor:—

"God quickly stopped their wicked breath
And sent two raging bears
Which tore them limb from limb to death
With blood, and groans, and tears."

With all due respect to the pious and poetical intentions of the authoresses of this terrible doggerel travesty of Scripture, they have really obscured the reality of the incident. The Bible does not say the boys were killed, but only torn; and it is an interesting fact that the bear's attack often takes the form of scalping—

at any rate, that is the method common with the sloth-bear of India, which frequently attacks man unprovoked. Thus there would be a curious appropriateness in the irreverent youngsters being made permanently bald, while the penalty would not be so disproportionate to the offence.

A casual allusion of the prophet Amos is of interest as showing what an ever-present terror the wild beasts must have been to the early Jews: "As if a man should flee from a lion, and a bear met him"—evidently the Biblical equivalent of our "jumping out of the frying-pan into the fire." The ferocity of the she-bear robbed of her whelps is also alluded to in the Bible, and the mournful howling of the distressed bear is recalled in the text of Isaiah: "We roar all like bears." David's encounter with the bear in defence of his father's flocks reminds us of the destructiveness of the beast to human property as well as persons; and Canon Tristram, to whose *Natural History of Palestine* I am indebted for some of the above references, mentions that the Palestine bear still varies its diet of fruits and roots "by a visit to the sheepfolds or the goats of the villages." This is much what the brown bear of Europe does, and in fact the Palestine bear, now rather rare in the country, is only a local race of that animal, remarkable for its light colour.

Allusions to the common bear are frequent

in classical writers, and as a matter of fact it is still found all over Continental Europe where there are forests of any extent; in our own country it existed during the Roman occupation, at any rate, having its haunts in the great Caledonian forests, though perhaps it had even at that period disappeared from Southern Britain. In Ireland it seems never to have been found.

The Scottish bears must have been particularly ferocious, or the Romans would not have gone to the trouble of exporting them from so distant a country as Scotland to Rome, when they could get bears so much nearer home. We know that they did this, and that they were used, like other fierce beasts, for the torture of human beings in the horrible exhibitions of the arena. In one of Martial's epigrams the fate of one Laureolus is alluded to: the poor wretch was fastened naked to a cross and exposed to the attack of a Caledonian bear.

Bears from one locality or another must have been common sights in Rome, for at the end of his *Art of Poetry* Horace compares the amateur poet, wild to inflict his terrible compositions on his friends, to a bear broken loose from his cage, in the rout he produces among those who are exposed to his attentions.

One great puzzle among bears, ancient and modern, is the African bear. Virgil speaks of old Acestes as

“Grim with his darts and Libyan she-bear's skin.”

Yet Pliny, not so very long after Virgil, particularly says there were no bears in Africa ; and on the other hand, a bear has been supposed to inhabit the Atlas range up to modern times. At any rate, a dead bear was seen by an English observer not much more than half a century ago ; but it would seem likely that the bear was always very local in North Africa, and it is probably now extinct there.

Within the last year, however, evidence has been brought forward tending to show that a bear of some sort really does occur in Africa south of the Sahara, a very interesting account of what certainly appears to have been such an animal having appeared in the *Journal of the East Africa and Uganda Natural History Society*, by Mr. Geoffrey Williams.

It seems that this gentleman, travelling some years ago on the Uasin Gishu, long before that district had any settlers, saw at the edge of the escarpment, and only about thirty yards off, an animal resembling a large bear, the height of which, in the sitting posture, was estimated at five feet. The beast was of a dark colour, and, though heavily furred before and on the limbs, was comparatively smooth and bare behind. This unequal distribution of coat—which may, of course, have been due to moulting, which effects a great alteration in the appearance of bears—appears to have been the only point differentiating it from an ordinary brown bear. Local natives, on being shown

pictures of various animals, at once identified the illustrations of bears as resembling their beast, and the Nandi name of it is given as *Chemosit*. The natives said "Chemosit" was very nocturnal and dangerously aggressive in his habits, but that he attacked only solitary people, as a rule, though they had once known one break into a hut and kill all the inmates, after which the other natives burnt it hut and all.

Mr. Williams failed to secure the specimen he saw, but no doubt others will turn up, though the beast is said to be very rare; but if it attacks only those who have no companion to tell the tale, it may easily be imagined to be scarcer than it really is.

To return to the bears of olden times; no account of the relations of bear and man would be complete without some reference to that mediæval survival of Roman cruelties which took the form of bear-baiting, so familiar to us from many references in Shakespeare. The bears for this must have been imported, as far as the English practice of the "sport" was concerned, although no doubt in Roman times the native animal was used. Bear-baiting lasted down to the last century, but long before that it was considered a disreputable form of amusement.

Even in the rough Tudor times, indeed, we find the poet Crowley remonstrating against bear-baiting, though his objections, as remarked by the author of that rare and quaint

little old book of 1830, *The Zoological Keepsake*, were not founded on humanitarianism. The lines quoted are as follows :—

“ What follie is this, to keep with danger,
A great Mastiffe Dog, and foule, ouglie Bear ;
And to this end,—to see them two fight,
With terrible tearings, a ful ouglie sight :
And methinkes those men most fools of al,
Whose store of money is but very smal ;
And yet, every Sunday, they wil surely spend
One penny or two, the Bearward's living to mend.

“ At Paris Garden, each Sunday, a man shall not fail
To find two or three hundred, for the Bearward's
vale ;
One halfpenny a-piece they use for to give,
When some of them have no more in their purses,
I believe :
Well, at the Last Day, their conscience wil declare,
That the poor ought to have all that they may
spare :
If you, therefore, give, to see a Bear fight,
Be sure God his curse upon you will light ! ”

The familiarity in English people's minds of the captive bear is indicated by a proverb which was in use in my boyhood : if one asked the whereabouts of a thing which was close at hand all the time, one would be told, “ There it is ; if it had been a bear it would have bitten you.” What being bitten by a bear feels like, by the way, has been well told by Lloyd, the author of *Scandinavian Adventures*, who lived to tell the tale, after having been mauled by one he had wounded, which was killed after the encounter. He tried shamming dead, in accordance with the prevailing idea that the bear will not mangle a corpse, but it did not do him

much good. "The pain," he says, "I suffered from his long-continued attacks on my body was bearable. When he had my limbs in his jaws it more resembled their being stuck in a huge vice than anything else; but when his jaws grasped, as they did, the whole crown of my head—during which I distinctly felt the fleshy part of his mouth to overlap my forehead—and his fangs very deliberately scored my head, my sufferings were intense. The sensation of his fangs slowly grating over the bare skull was not at all that of a sharp blow, as is often the case when a wound is inflicted, but rather, though very much more protracted, the craunch one feels during the extraction of a tooth. From certain circumstances, I have reason to believe that the bear continued to maltreat me for nearly three minutes. As I perfectly retained my senses the whole time, my feelings, whilst in this horrible situation, are beyond the power of description. But at length the incessant attacks of my gallant little dog drew the beast's attention from me, and I had the satisfaction to see him retreat, though at a very slow pace, into the adjoining thicket, where he was at once lost to view." On the beast being killed, it was found that it was a thin animal with broken or blunted fangs, to which circumstance Lloyd thinks he owed his life, while his close-cropped hair saved him from being scalped, as it afforded no hold for the beast's teeth; it did not attempt either to

claw or hug him, but from the attack on the head, and the danger Lloyd felt of the scalping, we are again reminded of the possibility of the peculiar appropriateness of the Biblical bears' behaviour to the case of the irreverent young prophet-baiters.

Captain J. H. Baldwin, in his account of the Himalayan black bear given in his book, *The Large and Small Game of Bengal and the North-West Provinces of India*, gives an instance of bear-baiting under the dominion of Nature, which is gruesome enough for anything. He says: "A gentleman I formerly met in the hills, a famed sportsman, related to me a most interesting anecdote of an encounter between a pack of wild dogs (dholes) and a bear, which he had witnessed. He was crossing a range of hills in the early morning, and by chance came across a ravenous pack baiting a poor bear, who, though making a stout resistance, was nearly done. His coat, and portions of his flesh, were torn to strips; and, although he had killed more than one of his opponents, he could not have held out much longer. If I remember rightly, B—t put an end to him with a bullet, and the wild pack made off."

This Himalayan black bear gives a good deal of trouble to the natives, being a dangerous beast and destructive to stock and crops as well. Mr. Alfred Ezra tells me of a case when a Kashmir native told him he might turn his twelve ponies into his (the native's) maize-



C. E. SWAN

HIMALAYAN BEAR AND WILD DOGS.

"A ravenous pack baiting a poor bear, who, though making a stout resistance, was nearly done."

field, as the crop was not worth troubling about after the damage one bear had done to it. The black bear of the Himalayas, indeed, has a worse character there than the brown bear, which in the Himalayas ranges higher, generally above the forest zone, which is the haunt of the brown bear in that region, though sometimes the two may be found on the same ground. The black bear of the plains of India, too, the uncouth, rough-haired sloth-bear, is a most dangerous beast, and is more feared by the jungle tribes than the tiger, owing to its habit of attacking without provocation.

Curiously enough, in America, it is the local species of black bear that is nearly harmless to man—though not to his pigs—while the grizzly, which represents the brown bear in America, and is hardly more than a variety of it, is a very dangerous beast, and highly destructive even to cattle. But it seldom attacks man nowadays, or comes out into open plain country, modern weapons and the elimination of the fiercest which always goes on when man successfully contends with wild animals, having reduced it to insignificance as a foe to humanity.

Nowadays in narratives of Arctic exploration we expect to hear of the Polar bear as a useful provider of sport and fresh meat, but there are instances which show that the bear in earlier times might look on man from that point of view.

In the first volume of Churchill's *Collection of*

Voyages there occurs an instance of the Polar bear's man-eating exploits that has several times been quoted, but seems little known nowadays :—

“ On the 6th of September, 1594, part of the crew of Barentz's vessel landed to search for a certain sort of stone ; during this search, two of the party laid down together to sleep, when a white bear, very lean, softly approached and seized one of them by the nape of the neck. The poor man, not knowing what it was, cried out, ‘ Who has seized me thus behind ? ’ on which his companion, raising his head, said, ‘ Holloa, mate, 'tis a bear,’ and immediately ran away. The bear, having dreadfully mangled the unfortunate man's head, sucked his blood ; the rest of the party, to the number of twenty, immediately ran with their arms, and found the bear devouring the body ; the bear, on seeing them, ran upon them, and carrying another man away, tore him also to pieces. This second adventure so terrified them, that they all fled. They returned, however, with a reinforcement ; and the two pilots having fired three times without hitting the animal, the purser approached a little nearer, and shot the bear in the head close to the eye. This did not cause him to quit his prey, for, holding the body which he was devouring fast by the neck, he carried it away, as yet quite entire. Nevertheless, they then perceived that he began

himself to totter ; and the purser and a Scotchman going towards him, they gave him several sabre wounds, and cut him to pieces, without his abandoning his prey."

Of all wild animals, the wolf seems to have been the most constant and persistent foe of man, and its range is so wide—over most of the Northern Hemisphere—that he has always been forced more or less to wage war with it, in defence of his domestic animals even at times and in localities where it was not dangerous to human life. The wolf, however, is seldom to be trusted anywhere—when, as in India, it does not associate in large packs, and seldom attacks adult people, it is a deadly foe to children, and in colder climates, where hunger in winter forces the desperate brutes to unite to attack prey they are too cowardly to attempt singly, the loss of human life has been great and still continues to occur.

Only a year or two ago, in Siberia, a huge pack of wolves, according to the Press, overpowered in detail and killed a party of a hundred people, as they returned in a train of sledges from a wedding, unarmed—and probably pretty drunk into the bargain, if the truth were known. The only persons to escape were the driver and his mate in the leading sledge, which conveyed the bride and bridegroom, and these worthies had saved their skins, it was said, by overpowering the bridegroom and

throwing his newly made wife to the ravenous brutes !

Proverbs like "keeping the wolf from the door," "man is a wolf to his fellow-man," and beliefs like those in the power of certain people to change themselves into "were-wolves," and in the fate of dumbness which fell on a person who was seen by a wolf before he saw the beast himself, as well as the familiar tale of Little Red Riding-Hood, speak more eloquently of the horror this beast has inspired in man than any historical record can do.

Yet, throughout its wide range, it can only be regarded as fully extirpated in our own islands, for though it has almost or completely disappeared in certain Continental areas, it is always liable to reassert itself, where no sea-barrier exists.

"With their long gallop, that can tire
The hound's deep hate, and hunter's fire—"

wolves can cover an immense distance in a short time, and invade districts where they have been unknown for years past. Moreover, they are prolific and hardy, and any remissness in hunting them down is certain to be followed by a most undesirable increase.

It used to be a general belief that wolves were extirpated in three years in England and Wales by the tax of three hundred wolves' heads yearly imposed by the Saxon King Edgar upon the Welsh Princes ; but this is a very great error ; as Mr. Harting says in his

most exhaustive work on *Extinct British Animals*, to which I shall be frequently indebted, "this must be taken to refer only to Wales, for, in the first place, it can hardly be supposed that the Welsh chieftain would be permitted to hunt out of his own dominions, and in the next place there is abundant documentary evidence to prove the existence of wolves in England for many centuries later."

This evidence is then most carefully reviewed, from reign to reign, by Mr. Harting, and the upshot of it is that wolves probably lingered on in England till the reign of Henry VII. But at this time they were still quite common in Scotland and Ireland, and did not become extinct in those parts of the British Islands for long after—nearly two centuries, though, as usually happens in such cases, there is difficulty in tracing out the date of the final extirpation of the species. As late as 1618, for instance, John Taylor, the water poet, who executed a walking tour from London to Edinburgh in that year, says of the ruined castle of Kildroghit in Braemar: "I speak of it because it was the last house that I saw in those parts; for I was the space of twelve days after before I saw either house, cornfield, or habitation of any creature, but deer, wild horses, wolves, and such-like creatures, which made me doubt that I should never have seen a house again"—a description which reads more like Siberia than Scotland.

So wild was the country, in fact, and so great the hatred of the wolves in the minds of the people, that whole tracts of woodland were cut down or burnt to destroy the sheltering-places of the vermin. There are several stories of much interest as to the circumstances attending the destruction of the last specimens of these beasts in various districts; for instance, Scrope, in his *Days of Deer Stalking*, thus narrates the death of the last wolves in East Sutherland:—

“ A man named Polson, of Wester Helmsdale, accompanied by two lads, one of them his son and the other an active herdboys, tracked a wolf to a rocky mountain gully, which forms the channel of the Burn of Sledale in Glen Loth. Here he discovered a narrow fissure in the midst of large fragments of rock, which led apparently to a larger opening or cavern below, which the wolf might use as his den. The two lads contrived to squeeze themselves through the fissure to examine the interior, whilst Polson kept guard on the outside.

“ The boys descended through the narrow passage into a small cavern, which was evidently a wolf's den, for the ground was covered with bones and horns of animals, feathers, and eggshells, and the dark space was somewhat enlivened by five or six active wolf cubs. Polson desired them to destroy these; and soon after

he heard their feeble howling. Almost at the same time, to his great horror, he saw approaching him a full-grown wolf, evidently the dam, raging furiously at the cries of her young. As she attempted to leap down, at one bound Polson instinctively threw himself forward and succeeded in catching a firm hold of the animal's long and bushy tail, just as the forepart of her body was within the narrow entrance of the cavern. He had unluckily placed his gun against a rock when aiding the boys in their descent, and could not now reach it. Without apprising the lads below of their imminent peril, the stout hunter kept a firm grip of the wolf's tail, which he wound round his left arm, and although the maddened brute scrambled and twisted and strove with all her might to force herself down to the rescue of her cubs, Polson was just able, with the exertion of all his strength, to keep her from going forward. In the midst of this singular struggle, which passed in silence, his son within the cave, finding the light excluded from above, asked in Gaelic: 'Father, what is keeping the light from us?' 'If the root of the tail breaks,' replied he, 'you will soon know that.' Before long, however, the man contrived to get a hold of his hunting-knife, and stabbed the wolf in the most vital parts he could reach. The enraged animal now attempted to turn and face her foe, but the hole was too narrow to allow of this; and when Polson saw his danger he

squeezed her forward, keeping her jammed in whilst he repeated his stabs as rapidly as he could, until the animal, being mortally wounded, was easily dragged back and finished."

What Stuart, the author of *Lays of the Deer Forest*, regards as probably the last of all the Scottish wolves, was killed under most striking circumstances as late, apparently, as 1743. According to his account, the brute, which seems to have been black, had killed two children, who with their mother were crossing the hills from Calder ; whereupon the Laird of MacIntosh asked MacQueen of Pall-à-chrocain, a stalwart hunter over six and a half feet high, and the owner of the best deer-hounds in the country, to attend a clan gathering to hunt down the wolf. MacQueen inquired into the circumstances, and promised to come, but did not turn up till so late in the morning that everyone was disgusted with so unsportsmanlike a delay, as they thought it, and when MacQueen and his dogs did appear, the irritation of the chief was not at all appeased when the big Highlander coolly asked, "What was the hurry?" However, he soon allayed the rising annoyance of everyone by bundling out from his plaid the wolf's head—he had already settled the matter on his own account! He described the achievement, according to another author, Sir Thomas Dick Lauder, as follows : "As I came through the ravine by east the hill

there, I foregathered wi' the beast. My long dog there turned him. I buckled wi' him, and dirkit him, and syne whuttled his craig, & I brought awa' his countenance for fear he might come alive again, for they are very precarious creatures." Although MacQueen took his exploit in this very casual fashion, MacIntosh thought it deserving of a high reward, and gave him the lands of Sean-achan to furnish meal for his good dogs in all time.

In Ireland the wolves survived longer even than in Scotland; even Oliver Cromwell did not consider it beneath his dignity to wage war against wolves as well as rebels there, and his Order in Council on the subject, given at Dublin, June 29th, 1653, runs as follows, as given by Mr. Harting :—

" 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 Wolfes 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."

Here, too, we find romantic stories about the hunting down of the last wolves. The last wolves of Tyrone, for instance, came to an end thus picturesquely described in *The Biography of a Tyrone Family*, as quoted by Mr. Harting :—

"In the mountainous parts of the county Tyrone, the inhabitants suffered much from Wolves, and gave as much for the head of one of these animals as they would now give (1829) for the capture of a notorious robber on the highway. There lived in those days an adventurer who, alone and unassisted, made it his occupation to destroy those ravagers. The time for attacking them was at night. There was a species of dog kept for the purpose of hunting them, resembling a rough, stout, half-bred greyhound, but much stronger.

"In the county Tyrone there was then a

large space of ground enclosed by a high stone wall, having a gap at the two opposite extremities, and in this were secured the flocks of the neighbouring farmers. Still, secure though this fold was deemed, it was entered by the Wolves, and its inmates slaughtered.

“The neighbouring proprietors having heard of the noted Wolf-hunter above-mentioned, by name Rory Carragh, sent for him and offered the usual reward, with some addition, if he would undertake to destroy the two remaining Wolves that had committed such devastation. Carragh, undertaking the task, took with him two Wolf dogs and a little boy, the only person he could prevail on to accompany him, and at the approach of night, repaired to the fold in question.

“‘Now,’ said Carragh to the boy, ‘as the Wolves usually attack the opposite extremities of the sheep-fold at the same time, I must leave you and one of the dogs to guard this one, while I go to the other. He steals with all the caution of a cat ; nor will you hear him ; but the dog will, and will positively give him the first fall. If you are not active, when he is down, to rivet his neck to the ground with this spear, he will rise up and kill both you and the dog.’

“‘I’ll do what I can,’ said the boy, as he took the spear from the Wolf-hunter’s hand.

“The boy immediately threw open the gate of the fold, and took his seat in the inner part,

close to the entrance, his faithful companion crouching at his side and seeming perfectly aware of the dangerous business he was engaged in. The night was very dark and cold, and the poor little boy being benumbed with the chilly air, was beginning to fall into a kind of sleep, when at that instant the dog, with a roar, leaped across him and laid his mortal enemy upon the earth. The boy was roused into double activity by the voice of his companion, and drove the spear through the Wolf's neck, as he had been directed ; at which time Carragh made his appearance with the head of the other."

The only reason for regret that the extinction of British wolves can leave in the mind of any reasonable person is that it resulted in the almost complete extinction of the celebrated wolf-hounds, the noblest of all breeds of dogs ; although the breed called Irish wolf-hounds at the present day, albeit admittedly of mixed origin, are said to have some of the blood of the old breed remaining. What this old breed was like is rather uncertain, as the evidence is conflicting, some tending to show that the dog was essentially simply a larger and more powerful edition of the Highland deer-hound, like its modern representative, while there is also reason to suppose that smooth hounds, more of the Great Dane type, existed. Very likely, as Mr. Rawdon Lee has suggested in his book



DEATH OF THE LAST TYRONE WOLF.

on *Modern Dogs*, any dog that could follow and tackle a wolf was thereupon dubbed a wolf-hound, just as fox-hounds, when entered to deer, become "stag-hounds." Similarly, in bear-baiting days, we hear of bear-dogs, though there seems to have been no distinct breed corresponding to the name.

It is certain, however, that British dogs of great size and courage were known and esteemed even in the times of the Roman occupation of our country; they were shown at Rome in the arena, and there was even a Roman Chief of the Kennels, whose business was to arrange about their export. As time went on it was the Irish form of the breed that obtained the most celebrity, and was highly valued whenever obtained. Such a dog must have been Sam, the hound of Gunnar the Peerless of Iceland, whose tragic story is told in the *Saga of Burnt Njal*. Gunnar, although, like Hector in the Iliad, he was a man whom one feels one knows and likes merely from reading his story, nevertheless had many enemies, partly through the envy of the mean-souled Icelanders, and partly by the misdoings of his shrew of a wife, Hallgerda. So it was a good gift that his friend Olaf the Peacock gave him when he bestowed on him this hound that he had received as a gift in Ireland. "He is big," said the Peacock, "and no worse follower than a sturdy man. Besides, it is part of his nature that he has man's wit, and he will bay at every man whom

he knows is thy foe, but never at thy friends ; he can see too in any man's face whether he means thee well or ill, and he will lay down his life to be true to thee." This hound's name is Sam. Then he said to the hound, " Now shalt thou follow Gunnar, and do him all the service thou canst." The hound went at once to Gunnar, and lay down at his feet.

This acquisition of Gunnar's was for some time a thorn in the side of his enemies, who did not see their way clear to attacking him unawares with such a faithful guardian on the premises. Having at last, however, after their usual cowardly fashion, got together a gang to fall upon him when they knew his people were all away haymaking, they seized the farmer who had the land next to Gunnar's, and forced him to call away the dog, which naturally knew him. The big hound fell into the trap, but as he went he caught a glimpse of the ambushed villains, and, turning with fury on the guide, whom he now knew to be a traitor—albeit an unwilling one, which a dog could not know—he tore his bowels out. The rest then killed the brave beast, but his last howl awoke his master, who realized that he must now turn single-handed to his last fight, in which he acquitted himself valiantly and killed two of his foes before he was overpowered and slain by numbers. Such was life among the Icelanders of the Saga period—a people who are sometimes held up to our admiration as manly fellows.

Wolves in North America have retreated more rapidly before civilization than in the Old World, and appear never to have been of quite so dangerous a nature. That it is quite possible for even wild American wolves and men to be on friendly terms is shown by what Hearne says in his *Journal*, written in 1795 : "The Wolves always burrow underground to bring forth their young, and though it is natural to suppose them very fierce at those times, yet I have frequently seen the Indians go to their dens and take out the young ones and play with them. I never knew a Northern Indian hurt one of them ; on the contrary, they always put them carefully into the den again ; and I have sometimes seen them paint the faces of the young Wolves with vermilion or red ochre."

But Mr. Thompson Seton, who gives this quotation, also says of the modern Manitoba wolves in the *Mammals of Manitoba* : "Their extreme shyness is partly a modern development, as also is the respect for man, which now fully possesses every gray wolf in the cattle country. There are many records which show the Wolf to have been a continual danger to mankind in the bow-and-arrow days. There can be no doubt that then man was considered a fair prey ; a difficult and wide-awake one, no doubt, but still a creature to be eaten in times of scarcity. Consequently, each winter in America, as in Europe, a number of

human beings were killed and devoured by hungry Wolves. During the last twenty years, however" (he is writing in 1909), "I cannot find a reliable instance of Western Wolves, or especially Manitoba Wolves, killing or even attacking human beings."

As an instance of the combined audacity and harmlessness of the modern Manitoba wolf, Mr. Seton gives an extraordinary anecdote of a couple which were found running round a wagon loaded with beef, and snatching a meal from the meat in spite of efforts on the part of the man who was drawing the wagon to drive them off with a pitchfork. The narrator of the incident to Mr. Seton shot the wolves, and the man said that they had destroyed sheep and a colt of his, but had never done harm to man. Mr. R. T. Pocock, Mammal Curator of the London Zoological Gardens, in a letter quoted by Mr. Seton in the *Mammals of Manitoba*, says of four young wolves raised a few years ago in the Gardens by a collie foster-mother, that after they were put in a paddock by themselves they grew wild and timid like two of their litter-brothers which had been raised by their real mother. One, however, of these dog-reared wolves "for some unknown cause remained tractable and dog-like. This is a most interesting case of individual variation in temperament, and suggests how breeds of domestic dogs have been brought to their present condition of tameness by breeding

from stock artificially selected for that attribute."

As an example of a tamable wolf which had grown up in the wild state, we may take the case of a black specimen trapped by an Indian in 1893, as reported to Mr. Seton by the Rev. J. A. McLaughlin. The Indian muzzled the wolf, harnessed him in his dog team, and "made him help haul in the load of fish." Mr. McLaughlin found this wolf chained up at the fort, the idea of the officer in charge being to mate it with one of his dogs. He handled it, and it was gentle and did not bite. This wolf may, of course, have had some blood of the domestic dog in it, but in view of the known differences of temperament in wild as well as tame animals, this instance, and the others given above, confirm Mr. Pocock's view, and help to do away with the difficulty of accounting for the descent of the dog, a sworn foe of the wolf and its frequent prey, and the friend of man, from wolves of some sort or other, which, as I shall presently endeavour to point out, seems to be the case. It must be remembered, as far as the eating of dogs by wolves goes, that wolves are well known to be cannibals, and the hatred between dog and wolf is simply an exaggeration of the clannishness well known even in the tame dog; while as to the dog's friendliness for man, and the way in which it can be taught to look after its natural prey—sheep and cattle—such a complete reversal of instinct has

shown itself in many animals, as in several recorded cases of cats which have made friends with birds. What is more to the point, since the fox is a near ally of the dog, this traditional foe of poultry has in some cases been known not only to spare them when in captivity, but even in one instance, at any rate, to entertain a friendly feeling for them. M. René Martin, in his *Mammals of France*, says: "M. Rollinat has at present several tame foxes. While most of these foxes are still depredators, one of them often goes into the poultry-yard and, far from persecuting the poultry, seems to want to protect them, so much so that, if anyone seizes a fowl, which, as usual, utters loud screams, this fox growls and bites the trousers of the intruder."

I may also cite here the case of a self-tamed Indian jackal which I recorded in my book, *Wild Beasts of the World*. This beast, fed and kindly treated by the owner of a house under whose veranda it had taken shelter in a famished and mangy condition, not only recovered its health, but got so tame that it would come into the veranda itself and lie down on a couch like a tame dog. And this though the Indian jackal, in spite of its being found even in towns, where it is on the look-out for garbage or any small live-stock it can steal, is no more a friend of man than the wolf; for it sometimes carries off babies. This is the kind of jackal that Homer mentions, for it extends westwards throughout Asia Minor

and even into South-Eastern Europe, finding its north-western limit in Hungary.

The wolf is not found in Africa—a fact well known to the ancients—his place being filled by the three species of hyænas, which beasts are indeed called wolves by the Boers, the brown hyæna being called the strand-wolf, and the commoner spotted kind the tiger-wolf, no doubt from its spotted markings resembling those of the leopard, called tiger in South Africa.

But the hyæna that has been longest known is the striped species, which is found in North Africa, ranging east through Asia Minor into India. It was fairly familiar to the ancients, though they had some remarkable notions about it; Aristotle took the trouble to expose the fallacy of the belief that it changed its sex, but the error was current centuries after; and parts of its skeleton were in demand with wizards as material for spells. Although hated on account of its habit of digging up the dead, this cowardly brute has never been a serious enemy of man, and so has not been killed off to the extent that one would expect in the case of a carnivore of its size.

Its near relative, the brown hyæna, however, having but a limited range—for it does not occur north of the Zambesi—and being dangerous to farm stock, to say nothing of sometimes attacking man when it could do so safely, has been killed off to such an extent that it is said to be in danger of extinction; so that it has

been thought worth while to have its portrait drawn here along with that of the bluebuck.

The spotted hyæna, which is a purely African animal, is in a flourishing condition still—far too much so, in fact ; for there is no doubt that this beast is one of the chief quadruped enemies of humanity in Africa, besides being a pest to all kinds of stock.

It was not well known to the ancients, as it is not known in North Africa, but it seems to be the original of the particularly weird beast known as the crocotta or leucocrotta. The noises this hyæna makes are quite enough to account for anything in the way of an evil reputation, for it is not only the hyæna that does the laughing, but it can make various other noises, more or less objectionable, and even has some idea of imitation, producing an absurd caricature of the lion's voice, according to Mr. Vaughan Kirby. It has a dreadful custom of eating people and animals piecemeal, making a snatch at a fleshy part and tearing off what it can ; and when war or disease has weakened the natives and laid them open to its attacks, it is a dreadful scourge. It also has a standing feud with the lion, for being in a chronically ravenous state it casts envious eyes on the game he has killed ; sometimes, coming too close, it cannot get away when the lion makes a rush at it, and is killed ; at other times, natives say, the indignant king of beasts punishes the poacher by mutilating its feet.



THE LION'S DEATHBED.

"His last days are rendered miserable by the skulking brutes which . . . eagerly await his miserable end."

When the lion is old and decrepit, however, matters must take another turn, and his last days are rendered miserable by the skulking brutes which now eagerly await, if they do not actually hurry, his miserable end.

Man has had every reason to persecute the wild boar, which not only provides meat even better than the pork of his domestic descendants, but is a most terrible pest to all sorts of crops. The only Biblical allusion to the swine—so abhorred by the Jews as unclean—as a wild animal, bears witness to its enmity to the farmer: “The boar out of the wood shall waste it.”

The boar was, indeed, when Canon Tristram visited Palestine about the middle of the last century, still very abundant there, and a standing nuisance. In a single night, he says, a party would uproot a whole field, and destroy the husbandmen’s hopes for the year, while in the vineyards they not only devoured the grapes, but munched up the bearing shoots of the vines.

Our ancient sporting writer, Turbervile, also bears witness to the destructive powers of the wild boar as known in England in his day. After saying that wild swine tread with the cleft halves of the hoof closer than tame pigs, and cut the ground more, he remarks: “There is likewise great difference in their rowtings; for a wild swine doth rowt deeper, because his snout is longer; and when they come into corn fieldes they follow a furrow, rowting and worming all

along by some balke until they come to the end. But tame swine rowte here and there all about the field, and never follow their rowting as the wild swine do. Likewise you may know them by the difference in their feedings in corne groune ; for the wild swine beare doune the corne round about them, in one certaine place, and tame swine feed scattering here and there.”

In addition to being a conscientious and thoroughgoing devastator like this, the boar, though not usually aggressive, can be a terrible foe when roused, as has been known from very ancient times. The grief of Venus when the handsome boy Adonis was slain by the boar he went to hunt, in the old legend, is well known by Shakespeare’s beautiful poem, which contains the most splendid description of the animal ever written, as in the following quatrain :—

“ His brawny sides, with hairy bristles armed,
Are better proof than thy spear’s point can enter ;
His short thick neck cannot be easily harmed,
Being ireful on the lion he will venture.”

Another classical story brings in the boar as an agent in establishing a well-known proverb. A cruel king had harshly punished one of his slaves, who turned on him and told him that he should never taste the fruit of the vineyard that was then being planted. Nevertheless, the vines grew and bore fruit, the grapes were pressed and the juice fermented, and the owner, about to taste the first cup of wine, called his

miserable thrall, in mockery, to let him see the failure of his desperate prophecy. But the slave replied, "There's many a slip 'twixt the cup and the lip"; and just then someone rushed in to say a boar was among the vines. The king left his new wine untasted, and rushed to attack the boar, which killed his assailant, and established the proverb which has lasted in unaltered form down to our times.

Such encounters with boars may happen any day in India now, and the beast, in his encounters with British sportsmen, who never shoot him in country where he can be ridden down and speared, displays the most indomitable spirit and ferocity. I have seen a photo of the brave brute sitting on his haunches, with four spears projecting from him, and yet waiting for another charge; and to show the beast's tenacity of purpose I may here relate an anecdote that was told me by a well-known Calcutta pig-sticker.

He was out boar-hunting, and the boar, with a spear standing out of his back, galloped straight across him; he could not pull up his pony in time to get out of the way, and the boar rushed right under his mount. Horse and man, of course, went head-over-heels, and my friend said that as he struck the ground he thought he was now going to feel what being ripped by a boar was like. However, the boar's point was a copse close by, and, disregarding the fallen foes he made straight for this, only to

fall dead as soon as he reached it ; the wrench of the spear as he struck the pony had no doubt completed the damage of the thrust. The narrator of this episode was home on a holiday a few years back, and took the opportunity of indulging in some boar-hunting—with the gun this time—in Albania. I asked him how the European boar compared in courage with the Indian race, and he replied contemptuously : “ Oh, he’s a miserable coward ; he *squeals* when he’s dying ! ” The Indian boar has apparently no breath to waste in such lamentations ; one fierce grunt as he turns to charge, and he keeps the rest of his breath for giving his adversaries something to “ squeal ” about, if possible. That he seldom hurts anyone is simply due to the fact that he is generally pursued by several horsemen, each riding hard for “ first spear,” so that his attention is liable to be distracted before he can damage anyone who happens to be unhorsed.

With such personal qualities in addition to destructive habits and the possession of edible flesh, it is surprising that the boar has suffered so little from our persecution ; few animals, indeed, have maintained their ground so well, for he still keeps most of his ancient range, being found even in a highly cultivated and thickly populated country like Belgium. Indeed, the only country of any size in which he has been entirely extirpated is our own ; and there his extermination is of comparatively recent date,

in England at any rate. It is strange to read of James I hunting the beast at Windsor in 1617; but the wild boar cannot have been far off extinction in Stuart times, though Mr. Harting, in his valuable book on *Extinct British Animals*, mentions an entry in an old account-book, dated February, 1683: "Pd. the cooper for a paille for ye wilde swine 0-2-0," as evidence that the beast was not extinct then. It seems to me that the very fact that the beasts were fed from a pail rather indicates that they were captive animals, and probably imported, for it is recorded that Charles I had tried to stock the New Forest with specimens imported from France, or, according to another account, from Germany, and that these animals, which "much increased, and became terrible to the travellers," were destroyed in the civil wars, though traces of the breed were left in the local tame pigs. Evelyn also introduced Continental wild swine into Surrey, as did, many years later, General Howe in Hampshire, but the local residents naturally enough in both cases refused to put up with such objectionable animals.

The wild ruminants, poor beasts, have been chiefly associated with human history as providers of human food; but they are pests to crops, and in India the depredations of deer are severely felt, while at least one species, the beautiful gazelle known as the springbok, has been as bad as the locust, in its days of abundance.

In 1824 Captain Stockenstrom thus described the abundance and migration of the springbok at the Cape in his day :—

“ It is scarcely possible for a person passing over some of the extensive tracts of the interior, and admiring that elegant antelope the springbok, thinly scattered over the plains, and bounding in playful innocence, to figure to himself that these ornaments of the desert can often become as destructive as the locusts themselves. The incredible numbers which sometimes pour in from the north, during protracted droughts, distress the farmer inconceivably. Any attempt at numerical computation would be vain ; and by trying to come near the truth, the writer would subject himself, in the eyes of those who have no knowledge of the country, to a suspicion that he was availing himself of a traveller’s assumed privilege. Yet it is well known in the interior, that on the approach of the *Trek-bokken* (as these migratory swarms are called) the grazier makes up his mind to look for pasture for his flocks elsewhere, and considers himself entirely dispossessed of his lands till heavy rains fall. Every attempt to save the cultivated fields if they be not enclosed by high and thick hedges proves abortive. Heaps of dry manure (the fuel of the Sneeuwbergen and other parts) are placed close to each other round the fields, and set on fire in the evening, so as to cause a dense smoke, by

which it is hoped the antelopes will be deterred from their inroads; but the dawn of day exposes the inefficacy of the precaution, by showing the lands, which appeared proud of their promising verdure the evening before, covered with thousands, and reaped level with the ground. Instances have been known of some of those prodigious droves passing through flocks of sheep, and numbers of the latter carried along with the torrent, being lost to the owners and becoming a prey to the wild beasts. As long as these droughts last, their inroads and depredations continue; and the havoc committed upon them is of course great, as they constitute the food of all classes; but no sooner do the rains fall than they disappear, and in a few days become as scarce on the northern borders as in the more protected districts of Bruintjes-Hoogte and Camdeboo. The African colonists themselves can form no conception of the cause of the extraordinary appearance of these animals; and, from their not being able to account for it, those who have not been eye-witnesses of such scenes consider their accounts as exaggerated; but a little more minute inspection of the country south of the Orange River solves the difficulty at once. The immense desert tracts between that river and our Colony, westward of the Seekoe River, though destitute of permanent springs, and therefore uninhabitable by human beings for any length of time, are, notwithstanding, interspersed with stagnant

pools and *vleys*, or natural reservoirs of brackish water, which, however bad, satisfies the game. In these endless plains, the springboks multiply, undisturbed by the hunter (except when occasionally the Bosjesman destroys a few with his poisoned arrows) until the country literally swarms with them; when, perhaps one year out of four or five, a lasting drought leaves the pools exhausted, and parches up the soil, naturally inclined to sterility. Thus want, principally of water, drives those myriads of animals either to the Orange River or to the Colony, when they intrude in the manner above described. But when the bountiful thunder-clouds pour their torrents upon our burnt-up country, reanimating vegetation, and restoring plenty to all graminivorous animals,—then, when we could, perhaps, afford to harbour those unwelcome visitors, their own instinct and our persecutions propel them again to their more sterile but peaceful and secluded plains, to recruit the numbers lost during their migration and to resume their attacks upon us, when their necessities shall again compel them.”

Pringle, who says he has little to add to this description, says, in *The Menageries* (1829), whence this quotation is taken: “I once passed through a most astonishing multitude scattered over the grassy plains near the Little Fish River. I could not, for my own part, profess to estimate their number with any degree of accuracy; but

they literally *whitened*, or rather *speckled*, the face of the country as far as the eye could reach over those far-stretching plains ; and a gentleman, better acquainted than myself with such scenes, who was riding with me, affirmed that we could not have fewer of these animals, at one time, under our eye, than twenty-five or thirty thousand."

The elephant must have been one of the most serious adversaries of early man, for his depredations on crops are on a magnificent scale, corresponding to his size ; but as he can also supply meat at similar wholesale rates, and is, for such a large animal, extremely timid, he has probably on the whole been less formidable and more useful than one would expect ; moreover, the Indian species, at all events, has long been a valued servant of man, though never domesticated in the proper sense of the word, wild animals being captured as required. The elephant has always been an animal of universal popularity, and he evidently made much the same impression on the Romans as on ourselves—that of a beast of extraordinary docility and intelligence. This is well seen in the following quaint account of an elephant exhibited in London in the seventeenth century, taken from an old hand-bill framed in the Library of the Zoological Society, in all its delightful vagaries of spelling, punctuation, capitals, and italics :—

“ A Full and True Relation of the
ELEPHANT

That is brought over into *England* from the
Indies, and Landed at *London*,
August 3rd, 1675.

“ Giving likewise a true Account of the
Wonderful Nature, Understanding, Breeding,
Taking, and Taming of Elephants.

And Likewise where this Elephant is to be seen.

“ Amongst all the Wonderful and Prodigious
Creatures that have been seen in this Kingdom
of *England*, since the Age of Man, none so
strange, nor so great as an Elephant, and which
is more, it cometh nearest in wit and capacity,
to man, as *Pliny* saith ; for they understand
the Language of that Country wherein they
are bred ; they do whatsoever they are com-
manded, they remember what duty they are
taught, and withal take delight both in love
and glory. Nay, more than all this, they
embrace goodness, honesty, prudence, and
equity (rare qualities to be found in men) and
withal have in Religion, reverence, (with a
kind of Devotion) not onely the Stars and
planets, but the Sun and Moon they also
worship. And some writers report thus much
of them, that when the New Moon begineth to
appear bright, they come down to a certain
River named *Amelus*, in the Desarts and
Forrests of Mauritania, where after they are
washed, and dashed themselves all over with

the water, and have saluted and adored, after their manner that planet, they return again into the woods, carrying before them their young Calves, that be wearied and tired. Moreover, they are thought to have a sense of Religion and Conscience in others: for when they are to pass the seas into another country, they will not Embarque before they be induced thereunto by an Oath of their Governours, that they shall return again; and seeing there have been divers of them, being infeebl'd by sickness (for as big as they be, subject they are to grievous Malladies) to lie upon their backs, casting and flinging Herbs up towards Heaven, as if they had procured and set the Earth to pray for them. Now for their Docility and aptness to learn anything, the King they adore they kneel before him, and offer unto him Garlands and Chaplets of Flowers, and green Herbs. The lesser sort of them, which they call Bastards, serve the *Indians* in good stead to plow their ground.

“They breed in that part of *Africk* which lyeth beyond the Deserts of *Syrtes*: also in *Mauretania*, they are found also amongst the *Æthiopians* and *Troglodites*, but *India* bringeth forth the biggest; as also the Dragons that are continually at variance with them, and evermore fighting, and those of such greatness that they can easily clasp and wind about the Elephants, and withal, tye them fast with a Knot. In this Conflict they dye, both the one

and the other : the Elephant falls down dead as conquered, and with his heavy weight crusheth and Squeezeth the Dragon that is wound and wreathed about him.

“ In *India*, from whence this Elephant came they take them in this manner : The Governour driveth one of them that are tame, into the Chase and Forrests, and when he can meet with one of them alone, or single him from the Herd, he beateth the wild beast till he hath made him weary, and then he mounteth upon him, and ruleth him as well as the other.

“ In *Africk* they catch them in great ditches, which they make for that purpose, -unto which if one of them chance to fall, and cannot get out : so soon as he is seen by other Elephants, they immediately come to succour him, they bring all the boughs they can get, and put them into the Ditch, then rowl down blocks and stones, and anything that will serve to raise a bank, then strive all they can to pluck him out.

“ The manner of taming (as furious and raging mad as they be sometimes) is with hunger and stripes ; but men must have the help of other Elephants that are tame already, to restrain the unruly Beast with strong chains. In the Indian and African Wars they served to carry Castles with armed Men on their backs, to enter the Squadrons and battalions of the Enemies, and for the most part, all the service in the Wars of the East, was

performed by them, they broke the ranks, bore down armed men that were in their way, and stamped them under foot. These terrible beasts (as outrageous as they seem) are frightened with the least grunting of a Swine. They breed but once in all their life time, and go two years with young, yet bring forth but one neither ; also they Live commonly by course of Nature 200 years, some of them 300. Their youthful time, and strength of age beginneth when they be sixty years old, but this which is brought over into England is said to be but seven.

“The Truncks and bodies of Trces is the best meat they have, and therein take most delight. They chew and eat their Meat with their mouth, but they breathe, drink, and smell with their Trunck, which is not improperly called their hand. Of all other living creatures they cannot abide a Mouse or a Rat, and if they perceive their provinder lying in the Manger taste or scent never so little of them, they refuse it, and will not touch it. They are mightily tormented with pain, if they chance in their Drinking to swallow down an Horse-Leech, for as soon as the horse-Leech hath settled fast in his Wind-Pipe it putteth him to intolerable pains ; their skin on their backs is most tough and hard, but the flesh soft and tender, covered their skin is neither with hair nor bristle, no not as much as in their tail, which might serve them in good stead to drive away the troublesome flyes.

Their skin is full of cross wrinckles, and besides that, the smell thereof is able to draw such vermine to it; and therefore when they are laid stretched along, and perceive the flies settle in swarms on their skins, suddenly they draw such cranies together close, and so crush them all to Death; their teeth bear a very high price, and were reckoned very commendable by the Heathens, to make the Stautes and Images of their gods; but the greatest use that we make of them here, is to make Combs, as we may see here at most Comb-makers doors in London.

“ Now having given you an account of their understanding, how they breed, the manner of taking and taming of them, I will now inform you of one lately brought over into England, and give you a full Description of it, as thus: This Elephant is of a Don colour, the body of it [though but young] is bigger than the bodies of two horses, a strange, wonderful, and mighty large head, with a Trunk or Nostril exceeding a yard downwards, Eyes but ordinary, Ears like a Blood-Hound, hanging down, Legs as big or bigger than an ordinary man's body, and feet proportionable, &c. But this being not above seven years old, is not grown the sixth part to what it will be about sixty years hence, if it live so long.

“ *If any persons are desirous to see this wonder of Beasts, let them repair to the Rising-Star in St. John's Court, near Clerkenwell-green,*

where they may have true information, where they may see it, it being kept neer it.

“Printed for *William Suttin*, in the Year, 1675. *With Allowance.*”

The information—such as it is—in this remarkable production is mostly taken from Pliny, and gives a good idea of ancient notions about the elephant. One interesting point to be noticed is that the African species is said to be smaller than the Indian, in direct contradiction to modern observation. But it must be borne in mind that a race of elephants, which became extinct in classical times, once inhabited northern Africa, and this, as the African elephant is known to vary locally, even producing a pigmy variety in the West, may easily have been smaller than the Indian animal. The inferior sort of elephants mentioned seems to show that even in Pliny's time the Indian natives recognized the three types into which they divide elephants: the Koomeriah, or high-caste elephant, which is all that an elephant should be in massiveness and dignified repose of manner; the Dwasala, or second-rate, to which the average elephant belongs; and the Mirga, or third-rate, which is a weedy, ill-conditioned brute, with long legs, sharp-ridged back, flabby trunk, and piggish, restless eyes. From the point of view of the Indian amateurs of elephants, the African species, in spite of his size, is a Mirga of the

most pronounced type, and he is not at all admired by them. It is this species, as everyone knows, that supplies most of the world's ivory, and it is for this that it has been so persecuted. It is now, however, well protected in all parts of Africa under British domination, and the Indian elephant is not allowed to be shot at all unless he is a "rogue"—a rogue elephant being about as bad as a man-eating tiger. Such fierce-dispositioned elephants have no doubt always existed, for, as we shall see later, even birds may develop a hatred for man, resulting in apparently unprovoked attacks.

It was not only with land animals that man has had to contend; there can be no doubt that early navigators, in their small ships, propelled so often by rowing, had to dread the attack of "sea-monsters" as they say they did, and these were no doubt the sperm whale or cachalot.

"Numberless stories," says Beale in his book on the sperm whale, "are told of fighting whales, many of which, however, are probably much exaggerated accounts of the real occurrences. A large whale, called 'Timor Jack,' is the hero of many strange stories, such as his destroying every boat which was sent out against him, until a contrivance was made by lashing a barrel to the end of the harpoon with which he was struck, and whilst his attention was directed and divided amongst several boats, means were found of giving him his death wound."

In the year 1804, the ship *Adonis*, being in company with several others, struck a large whale off the coast of New Zealand, which "stove" or destroyed nine boats before breakfast, and the chase consequently was necessarily given up. After destroying boats belonging to many ships, this whale was at last captured, and many harpoons of the various ships that had from time to time been sent out against him were found sticking in his body. This whale was called "New Zealand Tom," and the tradition is carefully preserved by whalers.

Accidents of the most fearful nature have frequently occurred in this hazardous pursuit, which to enumerate would fill the space of volumes: "For not only boats, but sometimes even ships have been destroyed by these powerful creatures. It is a well-authenticated fact, that an American whale-ship called the *Essex* was destroyed in the South Pacific Ocean by an enormous sperm whale. While the greater part of the crew were away in the boats, pursuing whales, the few people remaining on board saw an immense sperm whale come up close to the ship, and when very near he appeared to go down for the purpose of avoiding the vessel, and in doing so he struck his body against some part of the keel, which was broken off by the force of the blow and floated to the surface; the whale was then observed to rise a short distance from the ship, and come with apparently great fury towards it, striking

against one of the bows with his head, and completely 'staving' it in. The ship, of course, immediately filled, and fell over on her side, in which dreadful position the poor fellows in the boats soon espied their only home, being distant from the nearest land many hundred miles ; on returning to the wreck they found the few who had been left on board hastily congregated in a remaining whale-boat, into which they scarcely had time to take refuge before the vessel capsized. They with much difficulty obtained a scanty supply of provisions from the wreck, their only support on the long and dreary passage before them to the coast of Peru, to which they endeavoured to make the best of their way. One boat was fortunately found by a vessel not far from the coast : in it were the only survivors of the unfortunate crew, three in number, the remainder having perished under unheard-of suffering and privation."

This happened in 1820 ; in 1851, also off the coast of Peru, the *Ann Alexander* was sunk by a sperm whale, "under like circumstances to those of the *Essex*," says Captain Scammon, in his *Marine Mammals of the North-Western Coast of North America*, and he proceeds : "In 1807, the ship *Union*, of Nantucket, was wrecked 'by striking,' " says the narrator, "on a sperm whale. It was in the night, and the question is, whether the ship struck the animal accidentally, or whether the whale made an attack ? Other disasters to vessels might be

cited, which were occasioned by the attack of, or by coming into collision with, the colossal Cachalot. . . . And we have no doubt but that many vessels which have sailed from port, and never been heard of after, have suffered wreck through Cachalots."

In contrast to the terrible cachalot, which, with all other large whales, has now been greatly reduced by the pursuit of man, who, having learnt to overcome him, has hunted him relentlessly for his valuable products of oil and spermaceti, we have the cheery dolphin, which, in its exuberant jollity, reminds one of the squirrel among land animals, and seems to have particularly engaged the affections of the ancients. According to them the dolphin did not confine himself to rollicking round ships, but even entered into personal friendliness with men, and would save people from drowning, as in the case of the musician Arion, who, the story goes, was thrown overboard by robbers who coveted his wealth, and received on his back by a friendly dolphin which brought him safely to shore. Another good-natured dolphin, recorded by Pliny, used to take a little boy to school by water, on his back ; but leaving aside such stories as these, which nevertheless probably had some foundation in fact, we may notice one or two more easily confirmed dolphin tales.

"Men wonder," says Ælian in the eighteenth chapter of the first book of his *Natural History*,

“ at the great love of women for their children ; but I observe that mothers have survived the death of their sons and daughters, and that by the lapse of time their grief has abated, and they have found forgetfulness of their sorrows. Now, the female dolphin is, of all creatures, that which has the greatest love for its young. For it has two calves ; and when a fisherman wounds one with his trident or strikes it with his harpoon—a harpoon has a hole in it to which a long line is fixed, while the barbs penetrate and hold the beast—and while the wounded dolphin, in spite of its pain, is still vigorous the hunter lets the line run, for fear of the harpoon being torn out, which would mean to him a double loss, the dolphin going off with his harpoon in addition to his losing the beast ; and when he sees the beast is weakened and getting exhausted by its wound, he gently brings the ship alongside, and captures his booty. But the dam is not terrified by this performance, and is not kept away by fear, but by her wonderful instinct obeys her yearning for her young, and however much you try to frighten her, she cannot be driven off, but will not leave her offspring to its fate ; she keeps so close to the harpooners, as if to help it, that it is possible to strike her by hand, and so she is captured along with her young, although she had the opportunity of escape. And if both her calves are with her, and she perceives that one has been struck and is being hauled in as I have described

above, she attacks the other and drives it off with blows of her tail, and bites, and giving it by snorting and blowing a hint to seek safety in flight. So the unhurt calf goes off, and the mother hangs about till she is caught, and dies with her captured offspring."

It will be seen that the behaviour of the dolphin here is not unlike that attributed to the sea-cow by Steller, who is universally regarded as a reliable observer. Other tales of dolphins represent them as assistants to men in fishing, and in confirmation of these there is quite adequate modern evidence, as will be seen directly. Ælian, in his second book, has the following account of how dolphins help men in their fishing. On calm nights the fishermen hang out lanterns which give a soft light without glare; the fish, first attracted and then terrified by the light, rush to a rock or the shore, and are easily speared there. The dolphins, seeing by the light that fishing is going on, come to the assistance of the fisherman, driving in the fish, and preventing any from escaping. Thus a large quantity of the fish, hemmed in as they are by the dolphins and the boats, are captured; then the dolphins come up as if in expectation of their reward, which the fishermen are careful to give them ungrudgingly, with an eye to their assistance in the future. For the fishermen think that if they did not share the booty with the dolphins, they would have the creatures against them instead of on their

side. In the *Proceedings of the Zoological Society* for 1856, Fairholme gave the following account of the business alliance between the Australian blacks of Moreton Bay and the "porpoises" (more properly dolphins):—

"Between the two long islands which form the south part of Moreton Bay, is a long passage known as the South Passage, formerly used for ships entering the Bay, but now given up. Near the deserted Pilot Station at Amity Point, some of the natives may constantly be found during the warmer months of the year fishing for 'Mullet,' a very fine fish about the size of a mackerel. In this pursuit they are assisted in a most wonderful manner by the Porpoises. It seems that from time immemorial a sort of understanding has existed between the blacks and the Porpoises for their mutual advantage, and the former pretend to know all the Porpoises about the spot, and even have names for them.

"The beach here consists of shelving sand, and near the shore are small hillocks of sand, on which the blacks sit, watching for the appearance of a shoal of Mullet. Their nets, which are used by hand, and are stretched on a frame about 4 feet wide, lie ready on the beach. On seeing a shoal, several of the men run down, and with their spears make a peculiar splashing in the water. Whether the Porpoises really understand this as a signal, or think it is the fish, it is difficult to determine, but the result is

always the same ; they at once come in towards the shore, driving the Mullet before them. As they near the edge, a number of the blacks with spears and hand-nets quickly divide to the right and left, and dash into the water. The Porpoises being outside the shoal, numbers of fish are secured before they can break away. In the scene of apparent confusion that takes place, the blacks and Porpoises are seen splashing about close to each other. So fearless are the latter, that strangers, who have expressed doubts as to their tameness, have often been shown that they will take a fish from the end of a spear, when held to them.

“For my own part I cannot doubt that the understanding is real, and that the natives know these Porpoises, and that strange Porpoises would not show so little fear of the natives. The oldest men of the tribe say that the same kind of fishing has always been carried on as long as they can remember. Porpoises abound in the Bay, but in *no other part* do the natives fish with their assistance.”

Messrs. Lucas and Le Souëf, in their recent book on the *Animals of Australia*, mention a curious partnership between the whale fishermen of Twofold Bay, New South Wales, and the largest of the dolphin family, the grampus or killer. These creatures, they say, “are in the habit of driving the whales into the Bay, where the men dispatch them, rewarding the

monsters with the offal. The fishermen are loud in the praises of their allies, and strongly resent any interference with them."

Moreover, a correspondent of the *Field*, quoted by Mr. Millais in his account of the grampus in *The Mammals of Great Britain and Ireland*, says that this great whale-like dolphin or "minor whale," as he calls it, has often been known to swim up to men when upset into the water by their boat being smashed by a sperm whale, and simply smell them, going off in pursuit of the wounded whale; while to all the sharks the grampus "is a deadly enemy, and attacks them fiercely as they attempt to tear off mouthfuls of blubber from a killed Whale." Hence the beast is regarded as a friend of the whaleman in the Pacific.

There is even an instance of an individually friendly cetacean in the form of "Pelorus Jack," who is believed by Messrs. Hutton and Drummond to be a specimen of the large dolphin known as the goose-beak whale. "Pelorus Jack," they say in their book on the *Animals of New Zealand* (second edition), "often follows vessels in the bays and sounds at the north of the South Island, and his appearance always excites great interest on the part of passengers. He has become an object of so much public regard that the Government announced in the *Gazette* at the end of 1904 that he was to be protected for five years." It seems curious that the protection was thus limited, but as an

additional proof of the worthy dolphin's personal popularity, I may mention that I have heard he has even received the honour of illustration on a picture post card; if so, he ought to be the proudest of all wild animals!

Not only dolphins, but other creatures are known to hunt with men. The association of wild hawks with fowlers for hunting purposes has been well known from very ancient times, and no doubt the idea of specially taming birds for hawking originated in this way. Aristotle, in his *History of Animals* (Book IX, Chapter xxxvi), says: "In the district of Thrace, formerly called Cedripolis, men hunt small birds in the swamps in partnership with the hawks; they carry sticks with which they beat the reeds and brushwood, to put the birds on the wing, and the hawks hover about aloft and hunt them down; the birds in their fear fly earthwards again, and the men knock them down with their sticks and catch them, and share the booty with the hawks; for they throw out some of the birds, which the hawks snap up.

"And about the Sea of Azov they say that the wolves are in association with men in capturing fish; and if they do not give them some, they destroy the fishermen's nets when they are spread out to dry on the ground." These "wolves" surely were otters or seals, as it is hard to see of what use ordinary wolves could be in fishing.

With regard to the modern custom of wild

hawks hunting along with men, Mr. W. H. Hudson has pointed out how the gauchos of Argentina, when out snaring the partridge-like tinamous with a noose at the end of a pole, take care to ensure the game "lying well" by bribing the caracara hawk to hang about, throwing him a gizzard every now and then. And some years ago a correspondent of the *Field* described how the lugger falcon was in some parts of India half-domesticated. The boys would beat the bushes for small birds, while these big hawks hung about overhead; they "waited on," in fact, as falconers expect their trained hawks to do. He mentioned that if the hawks had sailed away, the boys would bring them back by a special call, so that the understanding between the two parties in the hunt was evidently quite complete.

A contrast to this amiable partnership between birds and man in sport is to be found in the persistent legends of great man-eating birds which were so familiar in antiquity. We have all read of the roc in the tale of "Sinbad the Sailor" in the *Arabian Nights*, a bird so wholesale in his methods that he was said, when the elephant and rhinoceros had both perished in deadly conflict, to carry off the two carcasses at once in his mighty talons, as a kite bears off a rat. Another big bird, or another version of the same sort of bird exaggerated in another direction, is to be found in the legend of the gryphon, a creature which, although provided

with beak and wings, was yet represented as a quadruped, and is still familiar in heraldry and in the adventures of Lewis Carroll's little heroine Alice.

Ælian's account of the gryphon, in the twenty-seventh chapter of his fourth book, is as follows: "I hear that the Gryphon, an Indian animal, is a four-footed beast as lions are, and that it has extremely powerful talons, like those of lions; but that it has feathers on its back, and that these are black, while the fore parts are red, but that the colour of the wings is different, being white. And Ctesias says its neck is adorned with blue feathers, and that it has an eagle's bill, and the sort of head that painters and sculptors give it, and that its eyes are like fire. And it makes its nest on the mountains, and it is impossible to catch an old one, but they take the young ones. And the Bactrians, whose country adjoins India, say that the gryphons guard the gold there, and that they scratch it up and make their nests of it, and that the Indians take what falls down. But the Indians say that the gryphons do not guard the gold, for they do not want it (in which idea it seems to me that they are right) but that when they themselves come to collect the gold, the gryphons fight them on account of the anxiety they feel for their young; and that the gryphons attack all other animals, and can overcome them easily, but are not a match for the lion or the elephant. So the natives, fearing these powerful creatures, do not

go out after gold in the daytime, but come at night, because they have a better chance of escaping notice at that time. Now this place, where the gryphons live and the gold is to be found, is an awful wilderness. So those who are out after this substance go a thousand or two together, fully armed, and take bags and sacks, and dig on a night when there is no moon. If the gryphons do not discover them, they gain the double advantage of getting away with their lives as well as their booty ; and when the gold has been refined by the methods of people skilled in that business, the reward of the danger I have spoken of is very great wealth ; but if they are caught in the act of taking it, they are lost. And, as I hear, they do not come home under three or four years."

What I like about this account is its moderation. Ctesias might quite as well have said that the gryphon could manage lions and elephants as well as everything else, while he was about it, so that in view of this, if we cut off his hind-legs, the gryphon is at least not worse than the roc.

The real origin of the gryphon and roc legends seems to be exaggerated accounts of the doings of the great bird known as the bearded vulture, the largest of all the Old World birds of prey, which is found, though nowhere abundantly at the present day, in most of the mountainous districts from the Pyrenees to China, and ranges south to Abyssinia. Its many names show how well known it has always

been ; it is the ossifrage (bone-breaker) mentioned among the unclean birds in the law of Moses, the aigupios (goat-vulture) of the Greeks, the lammergeier (lamb-vulture) of the German-speaking nations. Although not sturdily built like the great eagles and true vultures, it is long-tailed and long-winged, and so is nearly five feet from bill to tail-tip, and about twice that measurement in expanse of wing.

Although more brightly coloured than its relatives, with streaked dark grey back and orange-tawny breast, it has a mean, wicked look, owing to its narrow head, mostly white in the old bird and black in the young, and the bright scarlet ring surrounding the iris of the eye. Its character corresponds to its appearance ; it is a cowardly yet savage bird, hugging the hillsides in its gliding flight, and ready to knock over the cliff any lamb, kid, or such small animal it can surprise. Even men have been dashed to their death in this way, and this by a bird whose ordinary food consists of bones and such helpless reptiles as tortoises. Both of these objects it carries aloft in its claws, and drops them on the rocks till smashed, when it comes down and swallows the fragments, bolting very large morsels.

It is, in fact, a sort of feathered hyæna in its love for bones, and like the hyæna, will kill for itself if it can do so safely. It builds a huge nest of sticks, and beds its eggs on sods. Here we see several points of resemblance to the

gryphon ; the great size, the red fore-parts, the fiery eyes, the tearing up of earth for the nest, and the enmity to man. The bird is, in fact, the only one which has always been feared, hated, and persecuted by humanity like the wolf among beasts ; it has none of the nobility of the high-soaring, high-couraged eagle, and yet is more, apparently, to be feared, thus bearing out the usual rule that scavengers among animals, if they are killers at all, are the most likely to be man-eaters.

It has, of course, always been the enemy of shepherds, as its Greek and German names bear witness, and both Homer and Æschylus describe the wailing lamentations of the old ossifrages when they find their nest robbed of the young by the country-folk.

It is this bird, by the way, that is credited with having actually caused the death of the last-named poet. Æschylus, it seems, getting nervous in his old age, consulted the oracle of Delphi as to what his end would be. From that institution, whose promoters had reduced bilking by equivocation to a fine art, he got the reply that he should die by the fall of a house. Determined to cheat fate, the poet left town and camped out ; but, alas ! as he enjoyed the morning sun at his tent-door an " eagle " carrying a tortoise in its talons, flew over, and mistaking the poet's bald head for a stone, dropped his prey on it, and thus dealt him a fatal blow with the " house " of the reptile !

So goes the tale ; the critic will say this was a queer mistake for a keen-sighted bird of prey to make ; but curiously enough, I happen to know that such a bird may be puzzled by a bald head, by reason of a personal experience. I am bald myself, and early one morning in Calcutta I was standing bare-headed on the flat roof of my quarters, when a kite—kites, it must be remembered, are as common and tame out there as sparrows in London—swept over and touched the top of my head with his feet as he went. As kites will attack people who come too near their nests, I at first thought there must be a nest on some ledge of the roof or other roof adjacent, but on searching I found none, so, as the bird had also not scratched me, but merely touched my scalp with his knuckles, I came to the conclusion that he had never seen a European's bald head before—of course, one almost always has a hat on outdoors for fear of the sun—could not make out what on earth it was, and touched me to find out.

Bruce, in his *Travels*, shows the African race of the lammergeier, which he calls the golden eagle, as a foe feared even by the warlike Abyssinians a century ago :—

“ Upon the highest top of the mountain Lamalmon,” he says, “ while my servants were refreshing themselves from that toilsome rugged ascent, and enjoying the pleasure of a most delightful climate, eating their dinner in the

outer air with several large dishes of boiled goats' flesh before them, this enemy, as he turned out to be to them, appeared suddenly ; he did not stoop rapidly from a height, but came flying slowly along the ground, and sat down close to the meat within the ring the men had made round it. A great shout, or rather cry of distress, called me to the place. I saw the eagle stand for a minute as if to recollect himself, while the servants ran for their lances and shields. I walked up as nearly to him as I had time to do. His attention was fully fixed upon the flesh. I saw him put his foot into the pan where was a large piece in water prepared for boiling, but finding the smart, which he had not expected, he withdrew it, and forsook the piece which he held. There were two large pieces, a leg and a shoulder, lying upon a wooden platter, into these he trussed both his claws, and carried them off, but I thought he looked wistfully at the large piece which remained in the warm water. Away he went slowly along the ground as he had come. The face of the cliff over which criminals are thrown took him from our sight. The Mohammedans that drove the asses, who had, as we have already observed in the course of the journey, suffered from the hyæna, were much alarmed, and assured me of his return. My servants, on the other hand, very unwillingly expected him, and thought he had already more than his share.

“As I had myself a desire of more intimate

acquaintance with him, I loaded a rifle-gun with ball, and sat down close to the platter by the meat. It was not many minutes before he came, and a prodigious shout was raised by my attendants, He is coming! He is coming! enough to have discouraged a less courageous animal. Whether he was not quite so hungry as at the first visit, or suspected something from my appearance, I know not, but he made a small turn, and sat down about ten yards from me; the pan with the meat being between me and him. As the field was clear before me, and I did not know but his next move might bring him opposite to some of my people, and so that he might actually get the rest of the meat and make off, I shot him with the ball through the middle of his body about two inches below the wing, so that he lay down upon the grass without a single flutter." The bird's weight, he says, was twenty-two pounds, but Adams in his *Wanderings of a Naturalist in India*, says the heaviest he shot there was only fourteen, so that for twenty-two we should probably read twelve.

It is evident from the boldness of Bruce's lammergeier, and its persistence in coming back for more meat when, as his servants very reasonably thought, it had already had more than its share, that it was a breeding bird feeding young, and no doubt in bad condition besides, for though he says it was "very full of flesh," he especially mentions that the feathers on the sides of the wing were worn, and that the crown

and the part where the bill joins the base of the bill were bald ; this is not natural to the lammergeier, which has not a bald head like a true vulture. Indeed, having watched a pair at Mussoorie, I quite agree with Blanford in classing it as more of a kite than a vulture ; its great development of wing and tail, small feet, and easy gliding flight, are all kite-like, as is also its fearlessness of man. Everyone in the East knows the impudence of kites, of which I have given an instance, though when they swoop on a man it is generally to snatch some food from him ; and the attack is always startling by its unexpectedness.

That the lammergeier, pursuing similar tactics, may easily be really dangerous was Adams's opinion. "Oft," he says, "when clambering along a rocky precipice, picking every footstep with studious care, and daring not to lift my eyes for fear of making a false step, have my ears been assailed by the furious rush of the lämmergeyer, and a feeling that if he only touched me with his pinions I would have rolled into the yawning abyss below. Although often seen feeding on carrion and putrid animals, especially near European stations, in the solitude of his native mountains he hunts with great intrepidity. Natives have told me that the young of bears, ibex, wild and tame sheep and goats, are often carried away by the bearded vulture, but I have not seen an animal larger than a marmot in its talons."

Adams thinks the lammergeier was the original "roc."

This was written about fifty years ago, and the bird still haunts Indian stations. The pair at Mussoorie used to glide past so close that I could easily see the curious beard of bristles under the chin, which is the unique appendage of this redoubtable bird. It is called by the ordinary Anglo-Indian the golden eagle, just as it was by Bruce, and its exploits and reputation have probably got mixed up with that bird's, which is now said to be called the lammergeier in Switzerland, where the true lammergeier is extinct.

It was exterminated, apparently, as a noxious and dangerous bird, worse than the eagle, and the stories of its desperate deeds mostly come from the Alps. Of these one of the most interesting and circumstantial is that of the little girl who was carried off by a lammergeier. Mr. Dresser, in his *Birds of Europe*, translates it from Naumann's *Natural History of the Birds of Germany*, as follows: "Anna Zurbuchen, of Habchern, in Bern Oberland, born in 1760, was taken out by her parents, when she was nearly three years old, when they went to collect herbs. She fell asleep, and her father put his hat over her face and went to his work. Shortly after when he returned with a bundle of hay the child was gone; and the parents and peasants sought her in vain. During this time Heinrich Michel, of Unterseen, was going on a wild path to Wäppesbach, and suddenly heard

a child cry ; he ran towards the sound, and a bearded vulture rose, scared by him, from a mound, and soared away over the precipice. On the extreme edge of the latter, below which a stream roared and over whose edge any movement would have precipitated it, Michel found the child, which was uninjured, except on the left arm and hand, where the bird had probably clutched it ; its shoes, stockings, and cap were gone. This occurred on the 12th of July, 1763. The place where the child was found was about 1400 paces distant from the barn where it had been left asleep. The child was afterwards called *Lämmergeier-Anni*, and married Peter Frutiger, a tailor in Gewaldswyl, where she was still living in 1814." Naumann regarded this story as well authenticated, and as he was himself well known as one of the most accurate ornithologists who ever lived, his statements being said to "stand like stone and iron," his judgment on it may well be accepted.

In Dauria and Mandchuria, according to Radde, this bird is now extinct ; it appears to disappear as the great argali sheep recede from a district, pointing to its looking to them for a livelihood.

At any rate, the fact that it is a harmless prowler after bones and scraps in the part of the Himalayas best known to Europeans and in other well-known localities does not prove it is nowhere dangerous, or never was so. Naturalists are singularly slow at realizing that

circumstances alter cases ; they forget that our kite, for instance, now reduced to a few pairs specially protected in wild Wales, was once a common nuisance in our towns, snatching food from children's hands, chickens from the yards, and even linen from the lines when needing nesting materials ; and they do not realize that the allied Indian kite is doing much the same thing to-day. No doubt, when improved sanitation has banished it from Indian towns, our Anglo-Indian accounts of its daring will read strangely to the next generation.

With regard to the boldness of the lammergeier in the high Asian wilderness, Atkinson speaks in no uncertain terms : " It is a splendid sight," he says in his book *The Upper and Lower Amoor*, " watching this feathered monarch as he soars aloft, or swoops down upon his prey. The young of the argali and the kids he clutches in his terrible talons, carrying them to his eyrie with ease. Even the larger animals are not safe from his attack ; he has been seen to force them from a dangerous ledge by his powerful swoop, following their fall through the air like a shot, ready to strike his prey before it reached the bottom. He is by far the most dangerous and daring of the feathered tribe that I have ever encountered." If he thought the lammergeier was worse than the true golden eagles occurring in the same region, it must have been a terrible bird indeed, for he says of the golden eagle in the same work :—

“ The following incident will illustrate his power and courage, besides showing that he would prove a formidable opponent to any unarmed man, if hunger prompted him to dispute possession of his game. . . . A large maral (the Eastern red-deer) had been hunted down by three wolves, who had just seized him, and the ravenous brutes were tearing the noble animal to pieces while yet breathing. We instantly prepared to inflict punishment on two of the beasts, and crept quietly along under cover to get within range. We succeeded, and were levelling our rifles, when Sergae called my attention to two large bearcoots (the Mongolian name for the golden eagle) poising aloft and preparing for a swoop. He whispered, ‘ Don’t fire, and we shall see some grand sport.’

“ Presently one of the eagles shot down like an arrow, and was almost instantly followed by the other. When within about forty yards of the group, the wolves caught sight of them, and instantly stood on the defensive, showing their long, yellow fangs, and uttering a savage howl. In a few seconds the first bearcoot struck his prey ; one talon was fixed on his back, the other on the upper part of the neck, completely securing the head, while he tore out the wolf’s liver with his beak. The other bearcoot had seized another wolf, and shortly both were as lifeless as the animal they had hunted.

“ The third brute snarled when his comrades set up their wailing howls, and started for the

cover ; he was soon within range, when a puff of white smoke rose from Sergae's rifle, and the wolf rolled over, dead. The report startled the bearcoots, but we remained concealed, and they commenced their repast on the stag. Their attack had been made with so much gallantry, that neither the old hunter nor myself could raise a rifle against them, or disturb their banquet. When satisfied, they soared up to some lofty crags, and Sergae took off the skins of the poachers, which he intended keeping as trophies bravely won by the eagles.

“ My old friend had spent thirty years in the vast forests and mountains of Asia. He was thoroughly acquainted with the habits of the animals and the feathered race that inhabit them ; and the daring attack of the bearcoots was the most interesting scene he had witnessed.”

This certainly seems a very prodigious feat for mere birds, but it is well known that these Mongolian tribes still use the golden eagle, as Atkinson found them doing, for hawking the wolf. My friend, Mr. A. Ezra, during a sporting trip in high Asia, came across such birds, and though he did not see the sport, was told by the natives that the eagle attacks the wolf's face. This came pretty close to Atkinson's account of the attack, and the terrible force an eagle's talons can exert, even without the advantage of the swoop from above, is exemplified by an

anecdote told by Hamilton Smith in one of his volumes on dogs in the Naturalists' Library. Speaking of the courage of the fighting bull-dog of that period (1840), after mentioning one which encountered an American bison, and held on to its muzzle till crushed by the great beast's hoofs, he says: "We have known another hallooed on to attack a disabled eagle; the bird, unable to escape, threw himself on the back, and, as the dog sprang at his throat, struck him with his claws, one of which, penetrating the skull, killed him instantly, and caused the butcher, his master, the loss of a valued animal, and one hundred dollars in the wager."

Farther back still, Boswell, in his account of the celebrated tour in the Highlands of Dr. Johnson and himself, relates how a gentleman missed the deer-hound he had taken out with him, and had to leave it out that night; but on searching for it next day found it dead, and furnishing a meal for two eagles. Of course, the dog might have been killed by accident, or have run a deer and been fatally gored by the beast at bay, but the evidence is rather against the eagles as the cause of death, since no other is stated.

With regard to birds of prey carrying off children, we have not only the case of the lammergeier and the little girl above-quoted, but a similar one in the following.

Landt, in his description of the Faroe Islands,

published about a century ago, says of the white-tailed sea-eagle: "Built its nest formerly on Tintholm, where some ruins of houses show that a family once resided. But the eagle one day darted down on a young child, which was lying at a little distance from its mother, and carried it to its nest. The mother hastened to the rock where the nest was constructed, and which is so steep towards the summit, that the most expert and boldest bird-catchers have never ventured to climb up it; but the poor woman arrived too late, for the child was already dead, and its eyes torn out."

The rock where this dreadful occurrence took place, according to Captain Feilden (who gives the name as Lindholm), is still pointed out by the boatmen. Landt was a clergyman, and therefore a man of education, while his remarks on the living productions of Faroe show him to have been a good naturalist, so that his acceptance of this eagle and child story is noteworthy, and should be borne in mind by those who, like Mr. W. P. Pycraft in his work, *A Book of Birds*, consider that the stories of the golden eagle carrying off children "are silly stories, invented by the vulgar."

No doubt many of these stories are unreliable; indeed, only a year or two ago, one such, of which the scene was laid in Scotland, was proved to be a fabrication; but this does not prove that all such tales are unworthy of belief. There is nothing in the nature of

physical difficulty to prevent an eagle carrying off a child ; the golden eagle is not only, as we have seen, fierce enough to attack really dangerous quarry, but it is well known to be able to carry off hares, which will weigh as much as young babies, and struggle far more energetically ; while as to the sea-eagle's reputed exploit in Faroe, it must be remembered that a near but far less powerful relative of this bird, Pallas's sea-eagle, a common river-bird in India, has been actually seen to strike, lift, and land, though admittedly with great difficulty, a fish weighing no less than thirteen pounds two ounces. This must have been far heavier than its captor, for Pallas's sea-eagle is not so big as the golden eagle, which again is far smaller than the lammergeier, whose weight, as we have seen, is only about fourteen pounds.

So I am quite willing to believe that lammergeiers and eagles were once serious foes to children, and even often attacked men, in days when humanity was ill-armed and little more respected by the great birds of prey, than far more numerous and consequently less well fed, than by the scavenging kites of Europe in the Middle Ages and of India to-day. The Greeks had no doubt got their eagles and ossifrages, like their lions, into a proper state of respect for man, but matters were probably very different in the far-off regions of Asia where the gryphons were supposed to live, and of

course the exploits of the winged carnivora, like those of the tiger, would not lose in the telling as they travelled west.

Moreover, I feel sure that the legends, as old as Homer, of the cranes that fought and killed the poor little African pigmies, and of the Stymphalian birds whose extirpation was said to have been one of the great labours of Hercules, had a foundation in fact, and probably a common foundation, in the existence of some great wading-bird of dangerous proclivities. Even as it is, the pigmies we now know for certain to exist in the great African forests are not taller than the largest cranes and storks, and probably would have a poor chance with these great birds in a stand-up fight, unless better armed than primitive man usually has been. The very small size—a span high—which the Greeks attributed to the pigmies no doubt arose from their trying to proportion them to the common crane of Europe, which was supposed to wage war on the tiny men when it went south on migration ; and though they knew the difference between the European crane and stork well enough, the one being well known as a pest of the corn-fields, and the other loved as a foe to snakes, they might just as easily mix up foreign cranes and storks as the public confuse all these big waders at the present day—even in Ireland the heron, for instance, is commonly called the crane, and most people call every long-legged bird a stork.

In his description of Greece, Pausanias (Book VIII, Chapter xxii) gives the following account of the Stymphalian birds in his *Survey of Arcadia*, as translated by Dr. Frazer: "In the Stymphalian territory there is a spring from which the Emperor Hadrian brought water to Corinth. In winter the spring forms a small mere, from which again the River Stymphalus issues; but in summer there is no mere, and the river rises directly from the spring. This river goes down into a chasm in the ground, and reappearing on Argolis takes a new name, being called the Erasinus instead of the Stymphalus. The story goes that man-eating birds once bred beside the water of Stymphalus; these birds Hercules is said to have shot down. However, Pisander of Camirus says that he did not kill them, but chased them away by the noise of rattles.

"Amongst the wild creatures of the Arabian desert, there are birds called Stymphalian, which are every whit as fierce and dangerous to men as lions and leopards. They fly at the men who come to hunt them, wound them with their beaks, and kill them. They pierce armour of bronze and iron; but if the hunters wear thick garments of plaited bark, the beaks of the Stymphalian birds are held fast by the garment of bark, just as the wings of small birds are held by bird-lime. These birds are of the size of a crane, and they resemble ibises, but their beaks are stronger and not hooked like the

beak of an ibis. Now, whether the Arabian birds of the present day differ in species from their namesakes which were once found in Arcadia, I do not know ; but if there have always been Stymphalian birds, just as there have always been hawks and eagles, then I think that these birds are natives of Arabia ; a flock of them might at some time have flown from Stymphalus in Arcadia. Probably the Arabs called them originally by some name other than Stymphalian ; but the renown of Hercules, and the superiority of Greeks over barbarians, prevailed so far as to cause the birds in the Arabian desert to be known even to the present day by the name of Stymphalian."

Pausanias, it will be seen, gives the legend in a very simple form, but of course it had been embroidered, and the various additional circumstances recorded as attending on these truly "fearful wildfowl" are summed up by Smith, in the *Dictionary of Greek and Roman Biography and Mythology*. They had brazen claws, wings, and beaks, and used their feathers as arrows. They had been brought up by Mars, and were so numerous that with their secretions and feathers they killed men and beasts, and covered whole fields and meadows. They had taken refuge at the Stymphalian lake from fear of wolves ; and the brazen rattle which Hercules used as a scarecrow had been given him by Minerva. According to one version he "put them up" with this and then shot them ;

another tale held that when he had frightened them away they reappeared on the island of Aretias off the coast of Pontus in Asia Minor, where the expedition of the Argonauts found them.

Coins of Stymphalus still exist, showing just the sort of birds which Pausanias describes, and in his day there were figures of the birds at the roof of a temple of Diana in the town. Now, as the Stymphalian birds were something like the ibis, but had stouter and straight instead of curved (not "hooked") bills, and were also much bigger, the resemblance to the ibis might have been in their having had bald heads and necks like ibises, and there is in Africa (though not in Arabia, now very unsuitable for marsh-living creatures) a bird which would very well fit the Stymphalian creatures' description. This is the great carrion-eating marabout stork, a close ally of the well-known Indian adjutant; it is as big as a crane—in fact, bigger—is bald-headed and bare-necked, and has a very powerful straight bill. And it so happens that a very recently recorded episode shows that even at the present day it may display great disrespect, to say the least of it, for the lords of creation.

Dr. E. Hopkinson, in his valuable notes on the "Birds of Gambia," in *Bird Notes* (the organ of the Foreign Bird Club) for 1912, says: "Captain Stanley, the Commissioner of the Upper River Province, once when riding across

a large dry swamp came upon an enormous flock holding conclave on a bare tract in the middle of this. Hundreds of them were collected in one spot, who let him ride right into their midst, and would scarcely trouble to get out of his way, merely hopping or walking to one side when almost touched and then at once returning to their places. He tried to make them rise by riding at them and cracking his whip, but they merely responded by opening their beaks and flapping their wings at the horse; in fact, his actions only seemed to excite the birds to greater efforts to get rid of him. The horse naturally was beginning to object also, so that, fearing the animal would sooner or later get a peck in the eye, Captain Stanley rode off to camp for his camera, hoping to be able to get a photo of this most interesting assembly. Unfortunately on his return with the camera he found the crowd had departed. I once saw something of the same sort, vultures and marabouts round a carcass, which the latter absolutely refused to leave, almost showing fight with their beaks and wings when one tried to drive them off, but this was only, no doubt, because they were gorged and careless of anything but an overwhelming longing for post-prandial rest. In the other case, however, there was no carcass or any obvious cause for the gathering. Boldness like this is quite a departure from their normal behaviour, for as a rule when out in the bush they are pretty

wary birds, and not easy to approach, though in the towns, relying on the protection always accorded them, they are fearless of man."

It is pretty obvious that if Captain Stanley had been a pigmy on foot, instead of a white man on horseback, he might very easily have been mobbed to death by the great storks if he had persisted in forcing his way among them; and if ancient pigmies, even several together, tried to drive off marabouts from their carrion feasts, or to interfere with their nests, their defeat would have been pretty certain; and very likely for ages these great birds contended with men on fairly equal terms, though of course the account Pausanias gives of their being hunted with danger by armed men is exaggerated. As to their occurrence in Greece, an isolated colony in a wild district like Arcadia would have been no more wonderful than the lions in Thrace.

Moreover, Mr. W. Rothschild and his coadjutors only recently proved that a few centuries back an African ibis used to breed in Switzerland.

The fact is, one has to be very careful how one disbelieves altogether the stories of the ancients, as in the similar case of the tales of the natives to-day. Such a tale is that told by Indian natives of the propensity of the green whip-snake to strike at the eyes of men, a story which was till recently treated as a pure myth. Now, it fell to my lot to prove by a personal experience that this snake really deserved the reputation native tradition has given it,



AN INTERRUPTION IN THE MARABOUT MEETING.

and I may here quote from the account I gave of the episode in the *Journal of the Asiatic Society of Bengal*, 1898 :—

“ On December 1st, 1897, a bird-catcher, with whom I had previously had dealings, brought to my quarters two specimens of the Long-Snouted Whip-Snake (*Dryophis mycterizans*) for sale. Knowing them to be harmless, and the vendor having no fear of them, I took both in my hands and went to show them to a friend who was in an adjoining room ; the larger one having meanwhile struck at my hand, without breaking the skin. As I was exhibiting the snakes, I was rather unpleasantly surprised by finding this large specimen suddenly dart at my eye, and inflict a bite on it, which, as I had instinctively closed the threatened organ, only resulted in some small punctures on the eyelids, which were just sufficient to draw a little blood. The position of these, two on the upper, and one on the lower eyelid, sufficiently shows, I think, the deliberateness of the reptile's aim. Of course I suffered no inconvenience from the bite, although, on rubbing my eye a few hours afterwards, I removed a tooth rather over $\frac{1}{20}$ of an inch long from the puncture in the lower eyelid. This, however, after being examined under the microscope by Dr. Alcock and myself, proved not to be a grooved one, so that this little experience throws no light on the possible

effects of *Dryophis* fangs on the human subject ; I think, however, that it may fairly be allowed, in connection with the belief above-mentioned, to upset the reputation for gentleness which Dr. Boulenger awards to the species. I may say that I was not holding the snake roughly or maltreating it in any way, and that when confined afterwards in a glass case it repeatedly struck at anyone who came near, seeming to aim particularly at the face, though it soon recognized, apparently, the futility of attacking glass.

“ This intelligence in attack was again shown subsequently, when having transferred the snake to a large cage of wire gauze, I endeavoured to make it attack a gecko. This it would not do even when the lizard was thrown absolutely in its face, darting open-mouthed at me instead. It similarly refused to bite a handkerchief wherewith I teased, though I have succeeded in getting *Dendrophis pictus* (a black Andamanese variety) to do this.”

Snakes, of course, are much disliked by humanity, and the deadly species are responsible for the loss of a good many lives, but chiefly where man goes barefooted. In ancient times they would naturally have had more opportunities ; but on the whole they have not been serious foes of mankind—certainly not to be compared with crocodiles. Herodotus gives a very fair account of the African crocodile,

particularly mentioning how large it grows from a small beginning, since its egg is only the size of that of a goose; he also says that it was called crocodile by the Ionian Greeks after the crocodiles that were found in the walls in their own country. It seems that a lizard is still called crocodile in the island of Myconos, so that here we have an exact parallel to the case of the alligator in America, whose name is derived from the Spanish *el lagarto*—the lizard. Herodotus' account of the crocodile and its bird-friend is worth quoting, as it has been much doubted, but nevertheless confirmed by modern observations.

He says, in his second book: "Now, since it lives in the water, the inside of its mouth is all covered with leeches. Other birds and beasts flee from it, but the courser (*trochilus*) is at peace with it, since it renders the crocodile a service. For when the crocodile comes out of the water and then opens its mouth (for it has the custom of doing this, generally towards the west), the courser thereupon goes into its mouth and gobbles up the leeches; and the crocodile is pleased by this service and does no harm to the courser."

The particular species of courser meant is still a well-known bird in Egypt; it is an exceedingly pretty little plover, about the size of our ring-plover, and very prettily coloured—blue-grey (a tint unique among plovers and coursers), black, white, and buff.

With regard to the leeches, which have been particularly sneered at, there is a special kind which is only found in the mouth of the crocodile.

As to the length of seventeen cubits or more, which Herodotus assigns to the crocodile, although no modern specimen of the African species has been known to reach even twenty feet, there is in the British Museum the skull of a huge example of the larger Indian species, taken at Barisal, which was no less than eleven yards long, so that there is no reason to suppose that Herodotus' account was exaggerated, since no doubt crocodiles being less hunted—in fact, they were revered as sacred in some places—had a better chance to grow to huge sizes in his day, for these large reptiles continue to grow for an unknown period of years, unlike beasts and birds.

The African crocodile is now nearly extinct in Lower Egypt, but it is still common and a serious danger to man and his live-stock over Africa generally, as well as in Madagascar, where it is very common, and is known significantly as "the enemy." The above-mentioned larger species of Indian crocodile, too, is a well-known man-eater; unlike most crocodiles, it only frequents brackish water and often goes out to sea; thus it is not surprising that it is found all over South-East Asia in tidal water, and ranges east even into the Pacific region—the Solomon Islands and Fiji—as well

as to Northern Australia. Dr. Gadow, in his valuable book on reptiles, gives an account of some young ones which he kept and reared till they were over a yard long. They then showed their vicious nature, and instead of hiding would try to bite their feeder's hand. The alligator of North America, now very much reduced in numbers, is not reckoned a very dangerous reptile to man, though an enemy to dogs and pigs; but a South American species, no doubt the Jacaré-uassu, or large cayman, which grows to twenty feet, is a beast to fight shy of, judging from the account Bates gives, in his *Naturalist on the Amazons*, of the behaviour of these brutes at Ega.

"Alligators," he says, "were rather troublesome in the dry season. During these months there was almost always one or two lying in wait near the bathing-place for anything that might turn up at the edge of the water; dog, sheep, pig, child, or drunken Indian. When this visitor was about everyone took extra care whilst bathing. I used to imitate the natives in not advancing far from the bank, and in keeping my eye fixed on that of the monster, which stares with a disgusting leer along the surface of the water; the body being submerged to the level of the eyes, and the top of the head, with part of the dorsal crest, the only portions visible. When a little motion was perceived in the water behind the reptile's tail, bathers were obliged to beat a quick retreat.

I was never threatened myself, but I often saw crowds of women and children scared, whilst bathing, by the beast making a movement towards them; a general scamper to shore and peals of laughter were always the result in these cases. The men can always destroy these alligators when they like to take the trouble to set out with montarias and harpoons for the purpose; but they never do it unless one of the monsters, bolder than usual, puts someone's life in danger. This arouses them, and they then track the enemy with the greatest pertinacity; when half killed they drag it ashore and dispatch it amid loud execrations. Another, however, is sure to appear some days or weeks afterwards, and take the vacant place on the station."

Crocodiles and alligators will take a great deal of exterminating, and it is much to be wished that the trade in crocodile leather, which has worked much havoc with the comparatively harmless North American alligator, should be developed in the Tropics both of the Old and New Worlds; in this way a valuable product will be secured and a most obnoxious pest got rid of, to some extent, at any rate.

VI

MAN AS PRESERVER AND DISTRIBUTOR; VERMIN AND DOMESTIC CATTLE

THE ordinary mouse and the two species of rats—the house-rat and sewer-rat—come, as it were, between the animals which man has fought and those which he has befriended. He has for many ages done his best, without very great success so far, to keep down these impudent and destructive little vermin, but they nevertheless have succeeded in surviving and multiplying, and even have made use of the “lord of creation,” not only as a provider of board and lodging, but as an emigration agent, and have got nearly all over the world by his unwilling assistance. It is true that domestic races of mice and rats exist, and the cultivation of both has got so far in these days that they are regularly exhibited at shows, but, as a general rule, at any rate, the spread of these animals into new countries has been by the enterprise of the wild creatures themselves, whether travelling on foot or getting unconsciously carried as stowaways.

The mouse on account of its small size has, of course, the greatest chance of this sort of free transport, and it has been living with us so

long, that no one can tell nowadays where its original home really was, except that it was somewhere in the older-known parts of the world, and not in America or Australia, where all the native rats and mice are of different species from ours. Among ourselves, too, the town and country mice are of quite different kinds, for though field-mice may very occasionally take to living in houses, and the house-mouse is quite at home about corn-ricks and other outdoor places where living is easy, on the whole the house-mouse is a cockney and the field-mouse—even the long-tailed kind or wood-mouse, the most nearly allied to the common mouse—is a confirmed rustic.

Speaking of the town and country mice reminds one of the lion and mouse fable, quite as well known as that which tells of the interchange of civilities between this little couple.

The queer thing is that mice really are very familiar with lions, which seem to consider them beneath their notice ; at any rate, at the London Zoo you can see them playing about in the dens of the lions, though not in the other great felines' abodes ; I have seen one run over a lion's foot, and another sit up and trim his whiskers under the terrible paw as it conveniently overhung him where the lion lay. These mice seem to get much of their food by nibbling the bones the lion leaves, but they do not look as if this strong food agreed with them, not being a very prosperous-looking set.

Returning to the distribution of the mouse by our aid, it is interesting to note the countries it has *not* got to. These are, according to Mr. J. G. Millais, the Arctic and Antarctic regions generally, Iceland, the forest regions of Africa, the Sahara Desert, and the North-West Provinces of India ; several of these areas, it will be noted, are not much favoured by humanity as localities of residence. The question of the distribution of the two rats, or, at any rate, of the house-rat, is complicated by the fact that we do not know how far back the distinction between mouse and rat can be traced. There is no word definitely meaning rat in Latin or Greek, but on the other hand, mouse (*mus*) is used by the writers on natural history in a very wide sense ; indeed, to signify any rodent that was not a squirrel or a porcupine or a beaver, all of which, as now, had names of their own. Thus, the African mice that walk on two legs were evidently jerboas ; the other African mice with spines like a hedgehog were near allies of the common mouse, the spiny mice well known to-day, and it says much for the observation of these old naturalists that they had not overlooked even insignificant little animals like these ; we need not, thus, imagine that any important animal living near the seats of the old civilizations has become extinct without some record being left of its existence, even if only in the form of some very distorted and exaggerated legend.

But there is a beast mentioned by Roman writers as *sorex* (in Greek *hurax*), which may very well be a rat. It is said by an old commentator on the Greek poet Nicander, who is supposed to have lived about the second century before Christ, to have been called also pig-mouse, and to have had a snout like a pig; hence some scholars think it was a shrew, but it is surely quite as likely to have been named from its size, just as in India a very large kind of rat, which often comes into houses, is called bandicoot, by a corruption of two native Telugu words, *pandi kokku* (pig-rat). The name, by the way, has spread to Australia, but the animals to which it is there applied are not real rats at all, but rat-like marsupials, which do comparatively little harm.

The true bandicoot is certainly big for a rat, for its head and body may be over a foot long and its weight three pounds; but early travellers enlarged it a good deal. In the fourteenth century Friar Jordanus said there were Indian rats as big as foxes, and Ibn Batuta, the Moor, made them bigger than cats, while in the eighteenth, I regret to say, our own countryman Fryer said they were as big as pigs!

It is evident that the "mice" in the quotation now to be given were some sort of rats, but of which kind is hard to make out; the aquatic enterprise suggests the sewer-rat, and the climbing habits that older invader, the house-rat.

In Ælian's work on the *Nature of Animals*, Book XVII, Chapter xvii, he says :—

“ Amyntas in the work he calls *Stages* (*Stathmoi*) says that there are innumerable herds of oxen and horses in the Caspian country ; and that at certain times there are hordes of mice in irresistible numbers. And he also affirms that these boldly take to the water of continually flowing rivers with a rapid current, and, holding each other's tails in their teeth as a safeguard, succeed in crossing the river by this support, as it were. When, however, they have swum across to the cultivated land, they cut down the crops, and climb up into the trees and eat the fruit ; and they gnaw through the branches, which they cannot eat. So the Caspians not being able to prevent their invasion and the damage they do, are careful not to kill birds of prey ; and these birds, assembling themselves in such numbers that they seem like a cloud, carry off the mice, and thus by following their own natural instincts save the Caspians from famine. And foxes are so abundant in the Caspian country that they not only frequent farm buildings but come into the towns as well ; and a fox will come into a house, not, if you please, to do mischief or steal anything, but like a domestic animal ; and they fawn on the Caspians just as our little dogs do.

“ Now, these mice, which are a chronic

nuisance to the Caspians, are as big as the mongooses of Egypt, and they are fierce and savage, and have such powerful teeth that they can even cut and gnaw iron. Similar to these are the mice of Teredon, in Babylonia, whose skins are brought to Persia by traders in such wares; they are soft, and are sewn together to make warm tunics." Rat fur, I am told, by the way, is still used in the trade, but, needless to say, it is not called rat.

It is interesting to note that the ancients recognized the utility of birds of prey as rat-destroyers; and no doubt the foxes—if they were foxes, and not jackals, with whose habits the account better agrees, were encouraged to be tame on account of their services as ratters. But, as I shall presently have occasion to point out, the "natural enemy" cure cannot be relied upon to keep rodents down nowadays, whatever was the experience of antiquity.

Putting aside the early days of rat history, there can be little doubt that the original rat with which Europe first made unwilling acquaintance was the house-rat, often called the black rat or old English rat; misleadingly, because it is by no means always black throughout its range, though the race which formerly infested Britain and still lingers there was so; and also because it is not such a very old inhabitant of the British Isles, the first mention of it in English literature by name being in the fourteenth century, when Langland speaks in

the *Vision of Piers Plowman* of "ratones and smale mys"; but Mr. Millais, who gives this quotation, also quotes Geraldus Cambrensis of the twelfth century, who wrote in Latin, as speaking of a man in Wales as bothered by the larger species of mice, commonly called rats. Still, the Welsh name, "French mouse," given to the rat, shows it was regarded as a foreign animal when first separately recognized in Britain.

The real home of this rat seems to be India, where it is found not only in houses, but in trees; and in houses it tends to frequent the upper parts more than the sewer-rat does, though there is not very much difference between the general way of living of the two animals. It had got well distributed over the world by the time the sewer-rat started on its travels, and commenced its career of conquest of the other's territory.

The roamings of this ordinary up-to-date modern rat, the sewer-rat, seem to be unusually well known and recorded. Where he started is not exactly known, but it is believed that Chinese Mongolia is his native home. Probably he was always more or less of a waterside animal, as he is a strong swimmer, and when out for a holiday in the country, takes to waterside life almost as readily as the true water-rat, more properly called the water-vole. The only time I ever looked on rats sympathetically was when I once saw a family of them enjoying a peaceful

aquatic existence at the pretty little reedy pond in the wood on Hampstead Heath ; here they seemed quite in their element. In colour this rat is generally brown, but a black variety is not uncommon, especially in Ireland. But I have even seen black specimens which had been shot in the London Zoological Gardens, where rats, owing to the neighbourhood of the Regent's Canal, are a chronic nuisance.

This rat's aquatic propensities are evidenced by the first historical record of its appearance in Europe. Pallas says that in 1727 swarms of these vermin crossed the Volga, driven from their haunts by famine in India and earthquakes in Persia. This rat, however, is evidently not a true Indian animal, as in India it is mostly confined to seaports, not generally distributed. But it was in Indian ships that it reached England in 1731, while starting from Odessa in 1750 it overran Eastern Europe. It did not get to Paris till 1753, and was unknown in Sweden till 1770, so the name Norway rat, often given to it, is misleading, as Norway would certainly not have been invaded by it much before that country, though it is now common there. Although English ships took these rats to America in 1735, it was not till 1825 that they had got inland, though they are now found everywhere, and have superseded the house-rat, which had colonized America just as it has done Europe. The outrages of both rats on property are well known, and so are their

occasional attacks on our persons ; not only children, but grown men, have been killed by rats where these were numerous. Of late years also their importance as plague-diffusers has been fully recognized, plague being communicated to man by rat-fleas.

Of course, it is easily seen that the danger of plague is in direct proportion to the association of man and rats ; where people live in little huts among dirty surroundings where rats abound, feeding on garbage, they are more liable to be bitten by rat-fleas, especially when, like the Indian native, they have so few clothes. This accounts for the fact that plague, though so terribly destructive to the natives in India, was no particular terror to Europeans. I was in Calcutta during several years of the plague time, and no one ever regarded it as a serious danger, though cholera was well known as a standing menace to life. I came to the conclusion that influenza over here was a far greater risk, and am always much amused at the fuss our scaremongers make about the terrible prospect when a stray case of plague is reported in Europe.

We know the said scaremongers must have something to frighten the public with—if it is not germs it is Germans ; but it must be remembered that sanitary conditions now are very different from what they were in the time of the great plagues of Europe. Also, the attitude of the native of India to disease is very

different from that of the European—comically so, though the result is tragic.

This was well exemplified by a good old Calcutta babu (native clerk) with whom I once had a conversation on this subject which I have never forgotten. I knew the old man fairly well, as he was a bit of a bird-fancier, and one day, forgathered in the Calcutta bird market, we got into conversation on the subject of the plague, then only just beginning. "Where is your boasted European science now, sir," said the worthy babu, "in the presence of this plague?" "Well, babu," I replied, "you must remember that when we were as dirty in our surroundings in England as you are out here, we used to have plague, but by applying to sanitation this same science, we are now free from it." But he was not convinced. "Can science," he said solemnly, "avert inevitable doom?" "But if you apply science properly," said I, "this doom is not so inevitable as you think." Then he went off on a fresh tack, remarking, "But surely you will admit that even you Europeans are degenerating in intellect? Do you now produce a Shakespeare or a Newton?" "You must give us a chance, babu," I rejoined; "we can't turn out more than one or two geniuses in a century, even in the West, and during this nineteenth century we have produced Darwin, at any rate." "What!" said he; "would you refer to that man, who says we are descended from buffoons?"

Baboons were what he meant ; but I had so much trouble to keep my countenance that, not wishing to upset the good old fellow by showing involuntary amusement, I made some excuse to close the conversation and walk on.

But *revenons à nos moutons*, or to the rather less well-reputed beasts under discussion ; the abundance of rats in Calcutta in my day was something astonishing, and highly repulsive as well. Here in London, in ten years I have only twice seen a rat in the street. In Calcutta you could hardly walk round any block of buildings any night without starting one or two, and many a good hunt we used to have after them with terriers, seldom failing to score a "kill." Moreover, although my rooms were up four flights of stairs, there was always at least one rat which patrolled my bedroom every night. If I succeeded in getting rid of the incumbent for the time being, another used to get wind of the vacancy and occupy the post without delay—apparently *viâ* the rain-water pipe of the veranda. One of my last recollections of India was the meeting of the new-comer one night before he had made himself acquainted with the strategic points of my flat, and, by the aid of a terrier, "achieving his consummation," as the French say.

This abundance of rats, in the presence of homeless cats, pariah dogs, jackals, civets, mongooses, kites, and owls, near or actually in the town, shows the fallacy of the idea that if

one lets the carnivora, furred and feathered, alone, they will keep the vermin down for us. In this country, with only cats to represent carnivores in towns, rats may be said to be rare animals in comparison, as may be judged from what I have said above. In exterminating vermin—as in other things—if you want a thing well done you must do it yourself.

In conclusion, if man is to be reproached with exterminating or grievously reducing certain animals, he must be credited with being the best friend of rats and mice, always supposing that animals are to be judged simply as living things, and not on their merits as they appear to us!

When we come to the more satisfactory subject of the animals we have deliberately encouraged and distributed, whether these have first been domesticated or not, we shall find that they constitute a whole fauna in themselves. Man's double action as an exterminator and preserver is nowhere better marked than in the history of our common cattle. These are, of course, to be found as domestic animals wherever white men can colonize, at all events, and among many other races, while, as will be seen presently, they have gone back to the wild state in all quarters of the globe, even in our own islands; on the other hand, their original wild ancestor has now been extinct for some centuries past.

This ancestor was the beast known as the

urus to the Romans ; it was the aurochs of the Germans, and was first mentioned by Cæsar as an inhabitant of their great forests. He particularly says that it was like a bull in general appearance, but not much inferior in stature to an elephant.

This sounds like a very considerable exaggeration, but plenty of remains of the aurochs have been discovered, and some of them indicate an animal of very great size, perhaps six feet at the shoulder ; and a bull of this size would not be an insignificant rival to a small elephant. The aurochs had a wide range, over Europe generally, and east to Asia Minor ; its remains occur freely in our islands in peat bogs and the underlying deposit, those found in the latter being the larger. However, Mr. Lydekker, in his book *The Ox and its Kindred*, mentions a skull of the fen-preserved race, from Athole, with horns spanning forty-two inches from tip to tip.

It is also generally agreed that the aurochs was bigger than the other European wild ox, the bison of the Greeks and Romans, and the wisent of the Germans. Since the extinction of the true aurochs, this animal, being itself a wild ox, though of quite a distinct species, has often been confounded with it and spoken of as the aurochs, but all the early records make it clear that "aurochs" only meant the true wild bull.

This beast was the animal mentioned in the

Bible as "unicorn"; it was well known to the Assyrians, and is depicted on their bas-reliefs as being hunted by the kings. It does not look by any means gigantic on the bas-relief, but even if the artist is not at fault, it is quite possible, and likely, that even at the same period there existed local races of the wild ox which varied in size, just as the races of the African buffalo do at the present day. Some of these are huge beasts, such as the southern type, while the West African race is as small as our Jersey cattle.

The habits of the aurochs no doubt were very like those of the wild cattle of the present day; all we know positively is that it was a forest animal, and the first and most important cause of its extinction was probably the gradual cutting down of the great primeval forests of Europe.

Siegfried, in the *Nibelungenlied*, is recorded to have killed "four strong aurochs" in a day's hunt, to one bison and one elk, so that they must have been some of the commonest big game of the time. It may be mentioned that Siegfried's bag on this occasion also comprised "a grim schelch," but whatever this may have been has never transpired, though it has been suggested that it was a specimen of the giant deer, which may have lingered on to Siegfried's time. At any rate, the big-game list of Germany at this period was highly satisfactory to the hunter. There is evidence

that in the fifteenth century aurochs were still living in Europe as far west as the eastern border of Prussia, though now they had become rarer than the bison ; and, by being protected by the nobility of Poland, much as the so-called " wild cattle " are protected in England to-day, they managed to survive for a couple of centuries longer, the last known specimen being a cow which died in 1620.

The Jaktorowka forest, now no more existing than these wild cattle which haunted it, was the last stronghold of the aurochs, and here it was studied by Count Sigismund von Herberstein during the sixteenth century. He describes the animal in his work, *Commentaries on Muscovite Topics*, fully distinguishing it from the bison, and even, in the later editions, giving a figure of the beast, which is, judging from the reproduction of it in Mr. Lydekker's book, a most obvious wild bull. It is shown as black, and Herberstein stated that the aurochs was like black tame cattle, and this is confirmed by contemporary accounts published by the old naturalist Gesner, but his informants stated that the calves, which were born in May, were not black, but blackish brown. One of Gesner's informants, Baron Bonarus, also said that the aurochs often mated with tame cows, and no doubt some of the later aurochs were cross-bred. Both Gesner's informants and Herberstein mentioned that the beast had a light streak along the back, and there is also evidence that red and

grey specimens occurred ; no doubt the beast varied to some extent in colour.

One thing, however, is certain—that it was not white, like the so-called wild cattle of our parks ; indeed, these show that, although they are wild enough for all practical purposes now, they originally came from a coloured ancestor and must have at some remote time been bred selectively to keep up the white colour, by occasionally producing black calves. This happened recently with specimens at the Zoological Gardens for two years in succession, and I need hardly remind my readers that, though coloured animals, wild or tame, are generally liable to produce white varieties, *wild* white animals do not produce coloured sports. The “black swan” was quite a good type of impossibility until Australia with its distinct black species of swan was discovered, and even this may produce albinos.

These park cattle used formerly to be kept in about a score of British parks, but are now only to be found, Mr. Lydekker says, at Cadzow, Chillingham, Kilmory, Lyme, and Somerford. Those at Chillingham have generally been the best known. These cattle had roamed the country in a half-wild state in the Middle Ages, and when the various parks were enclosed were driven in and thus confined ; at any rate, that was the case with the Chartley herd, which had inhabited Needwood Forest, from which the park was cut off. These park cattle differ

somewhat in shape of horns, and some even had none ; some also had black " points "—ears and feet—while in others they were red, but as they were evidently of old tame stock, these variations were, and are, not very interesting. In general form they distinctly recall the aurochs, but are not of large size ; from a butcher's point of view they are well shaped, being very similar to Highland cattle, which, it will be remembered, resemble the aurochs in often being black, and in any case not showing the pied patterns so common in most of our cattle.

The black Pembroke cattle also appear to be a primitive type, no doubt as old as the park cattle themselves, and, as such breeds exist, it seems rather absurd nowadays to keep such unmanageable and dangerous brutes as " wild " cattle in the parks at all, or to show them in zoological gardens where domestic breeds of our well-known animals are regarded with contempt.

Their habits, however, are of some interest as showing us how the aurochs probably lived ; they are shy, but must not be approached too closely ; and the cows hide their calves, and the little creatures lie flat to the ground like fawns when alarmed. They sleep by day and feed at night, and the bulls fight for the mastership of the herd. Their fighting powers are very considerable, too, for more than one person, who knew the Spanish bull-ring, has told me that the British wild bull had been tried there and

was objected to as too fierce!—he simply cleared the ring and gave Don Desperado and Co. no chance to exhibit their skill in agility as opposed to brute bovine force. I simply tell the tale as it was told to me, but it must be remembered that the British cattle are as absolutely uncontrolled as anything within a park fence can be, whereas the Spanish bulls are under a certain amount of management by man. Moreover, the British bull is far more active than would be supposed; one they had in the Zoological Gardens once jumped out through the half-door of his stable—a most impossible-looking feat; and a cow took five horsemen to cut her off from her native herd for transport to the Gardens.

As our European cattle have been carried about all over the world where we have gone ourselves, and as, when not looked after, they go back to the wild state with remarkable ease, it is not surprising to find them living, as wild as any aurochs ever was, in widely different countries. Thus there are, or used to be, wild cattle in Australia; Darwin, during his voyage on the *Beagle*, met with them in the Falklands, and especially noticed what magnificent and huge animals the bulls were there, and also found that herds of different colours tended to be found in different localities. Moseley, in the *Challenger*, visiting the same islands many years later, found the cattle were being killed off to make way for the sheep with which the islands

were stocked. Wild cattle exist in the Sandwich Islands also, and seem to have found a very safe and congenial home in Patagonia, according to the accounts of Captain Musters and Mr. Hesketh Prichard, who met with them there at intervals of many years, and hunted them. An experience of the captain, who wrote in 1871, shows that wild cattle can be as dangerous as most big game. He was living with the Patagonian Indians as one of themselves, and he was one of a party who were trying to secure a Christmas dinner of the appropriate kind—at any rate, for the Englishmen—from a wild bull. The beast stood at bay in a thicket, and Musters very pluckily went in at him on foot with a revolver; but just as he got within range the bull charged, knocking him down, as his spur had caught in a root as he turned to run. However, the beast passed on, and after Musters had got up and given him a bullet in the flank, he charged an Indian who tried to lasso him, and fatally gored the savage's horse, the rider being tossed head-first into a bush. He was not hurt, but the gallant naval officer's memento of the bull-baiting was a couple of broken ribs, while the bull got off altogether, and no one got any dinner at all, as the chief in command would not allow the party to follow up the quarry, or even to eat any of the dead horse, which would have been quite in the ordinary course of events, the Patagonians being regular horse-eaters.

Indeed, Musters says that when they did get wild beef he did not appreciate it after a course of horse-flesh and wild game.

Mr. Prichard's experiences were never so exciting as this, but he found the wild cattle quite as well able to take care of themselves as other wild animals, and, though he killed a few, was unable to secure a particularly fine yellow bull on which he had set his heart, as he calculated its horns must have had a span of four feet. These cattle, he says, date back to the early days of the Spanish occupation, various escaped beasts having drifted across the Pampas to the Cordillera, where they kept to the forests of the foot-hills. It may here be mentioned that wild cattle seem always to take to the forest where there is any, going back to the habits of their ancestor the aurochs. Indeed, they are not suited to a life in the open in countries with a cold winter, as, unlike their relative the American bison, they do not understand pawing away the snow to get at buried grass. On hilly ground also, they are quite at home, being good climbers for animals of their size. The older herds in Patagonia, according to Mr. Prichard, have quite lost the smooth coat of most tame cattle and have become shaggy and long-horned, so that our Highlanders must evidently also be primitive in type. Wild cattle also appear to be commonly self-coloured like the Highland breed. The Patagonian herds still, no doubt, occasionally receive

recruits from the east coast farms, for it is noticed that escaped beasts instinctively head north-west for the Cordillera, and Mr. Prichard thinks that they will long continue to rove among the hill-forests, being so wary and hard to get at, while the value of their hides in such a thinly populated country with few facilities for transport, is no danger to them at present. This is satisfactory from a sportsman's point of view, for Mr. Prichard thinks that from all he saw of them, "they yield the palm as a sporting animal to few others in the world."

The humped cattle known in books as zebus, though this name is not used by any native race, seem to be a perfectly distinct species from the descendants of the aurochs; they vary a great deal in size, some being larger and others smaller than any of the breeds of common cattle: the hump also varies much in development, and is sometimes wanting, and the ears may either be very long or of the ordinary size. But they show several points which argue that they are a distinct species: they are higher on the leg and shorter in the body than our cattle, and carry their heads higher; their horns and dewlap are set on differently, and the dewlap is always deeper than in the European breeds; they do not bellow, but make a grunting noise, and that very seldom; they do not feel heat so much, never seeking the shade nor standing in water, and they are very much more gentle in disposition,

though not always to be trusted by Europeans. Though often coloured red or white like European cattle, they are seldom pied in the same pattern, and many of them are iron-grey or shaded with black and grey in a manner never seen in the common kind.

All cattle, by the way, are sacred to Hindoos ; the " Brahminy bull " is simply a particularly fine stud-bull specially dedicated to the gods ; he is the property of the local municipality, and does just as he likes, diverting the traffic if he lies down in a narrow street, and helping himself from the greengrocers' and grain-dealers' stalls. These cattle are the kind commonly met with wherever cattle are kept at all in India and the warmer parts of Asia ; they are the cattle kept by the natives of Africa, and were also those of the ancient Egyptians. They still do all the ordinary draught work in India, and they have long run wild in the Oude and Rohilcund districts, in spite of the presence of tigers. The theory has recently been started that these cattle are the descendants of the beast called the banteng in the East Indies, of which the tsine of Burmah is a local race. If they do not originate from the banteng their ancestor must have become extinct a long time ago, as there is no record of it ; but one objection to the banteng ancestry is that one never sees a zebu coloured quite like a banteng, and another is that the banteng has a ridge on the shoulders formed by the spines of the

vertebræ, while the hump of the zebu is a mass of fat and flesh, streaky like bacon, and much valued as a choice article of food by Europeans in India. Banteng have white "stockings" and a white patch on the stern when full-grown; their body-colour is chestnut-red, but in the bulls of the East Indian race, though not in the Burmese tsine, this becomes sooty-black with age.

Although tsine are fierce and dangerous, East Indian banteng seem quite tamable, and they are domesticated in Java and Bali; many are sent from the latter island to Singapore for butchering purposes. They are very beautiful animals, deer-like about the head, at any rate in the cows, and the horns of these are very like those of some zebu. The dewlap is very slight, but flaps of skin like this are particularly apt to appear in domestic animals, so that the deep dewlap of the zebu does not disprove a possible banteng ancestry.

Very closely allied to the banteng is the gayal, which naturalists nowadays are inclined to regard simply as a more or less tame race of the gaur or sladang, a magnificent wild ox of India and Malaysia, which is wrongly called bison by Indian sportsmen. It is a huge beast, reaching six feet at the very high-ridged shoulders, but well built and not clumsy, with the horns of moderate size and turning inwards. It has white stockings, but no white patch on the stern; the body-colour is black in the bull,

but inclines to brown in the cow, and the calves are chestnut all over. The coat is very close and sleek, as in the banteng and zebu. The gaur lives in hill-forests, and is dangerous when hunted, and at times even attacks without provocation, but he is not nearly such a truculent character as the wild buffaloes of India and Africa ; indeed, on the whole, these white-stockinged wild cattle seem to be the most gentle of the whole tribe, which is another point in favour of the descent of the zebu from the banteng. The tame "gayal," or mithan, is kept by certain jungle tribes who inhabit the forest region extending from Assam to Chittagong. Typical specimens differ from gaur in having shorter heads and horns, these horns being more or less blackish, whereas those of the wild gaur are light greenish ; moreover, their backs are not so high on the ridge, they have a well-developed dewlap, and they are never so big as the wild animal. Besides this, they are not true to colour ; some are all black without the white stockings, some have, on the other hand, much more white than this, being even piebald like common cattle, and there are said to be white and yellow specimens as well.

All these differences are just what one might expect in a tame as compared to a wild ox, and Mr. Stuart Baker, the best of modern Indian field-naturalists, has proved that the two races, wild and tame, cannot be always separated by a hard-and-fast line ; in fact, many tame animals

are the offspring of wild gaur bulls. Mr. Baker, who has had the best of opportunities for getting information, as he has lived among that tribe, does not believe that the Kukis ever tamed the wild animals by the method that has been described ; this consisted in putting salt, of which all such animals are very fond, as everyone knows, in a well-known haunt of the gaur, and then showing themselves by degrees till the animals got used to them and would even follow them to the villages. The real origin of the tale is, he thinks, the difficulty which the natives have in getting their animals to leave a place when they themselves go away. This they constantly do, for like so many forest savages, they do not live long in one spot, but move away and burn down their huts when they have exhausted the productions of one place. The gayal, like our tame cats, are inclined to go back to their old home, so that their owners have to entice them away to the new village by giving them salt, and even then some will go back to the old spot and have to be enticed home all over again.

At the same time this plan of taming wild cattle is one that may very easily have been tried in past ages, and by other races than these East Asiatic jungle tribes, considering that the beasts were formerly, no doubt, far less afraid of man than he has since given them reason to be. Gayals are not very much domesticated as it is ; they find their own living in the forest, and are

never milked or made to work by their owners. In fact, all the use they seem to make of them is to kill off the bulls after a few years for sacrifices and feasts ; but no doubt they, like African tribes, feel a very great pleasure in possessing cattle at all—the “fancy” for having such beasts has always been very strong with humanity.

The wild gaur is a very delicate animal in captivity, and has only once been shown at the London Zoological Gardens ; the gayal is hardier, but still delicate compared with most cattle ; but this has lived and bred well in London. However, these animals have so far been practically confined to their native forests, and the chief interest they have for us here is the fact that they have been tamed at all.

Much more thoroughly domesticated than the gayal, but still only suited to special conditions, are the yak and water-buffalo. The yak is found wild on the bleak highlands of the great Asiatic plateau—the “Roof of the World,” where it has to endure the severest cold, against which the great bushy fringe of hair along its sides is no doubt some protection, while the thickly haired tail, from which the old name “Horse-tailed Buffalo” is derived, is said to serve as a muffler when the beast lies down with head and tail close together. The Tibetans and other Mongol tribes in the high Asiatic steppes have completely tamed the yak, and such tame yaks are the only cattle kept in most

of this region. No animals can equal them for undergoing exertion in the rarefied air of the heights, and especially in ploughing through snow-drifts; but they are terribly slow and stupid, and even when coming back to camp after a day's work will turn round and bolt off up-hill. They are used for riding and carrying packs, not for draught. These tame yaks are, as usual in tame cattle, not so big as the wild yak, and are not all black as these are, but piebald or even white all over. As they cannot bear heat, they are only used in the mountains, but they are to be seen in most zoological gardens, and will breed well in England, at all events.

Recently, according to Mr. Aflalo in his book *The Wilderness and Jungle*, the yak has been introduced into Manitoba, and in the northern part of America it ought to be of as much use as a domestic animal as it is in its own home, since it can bear any amount of dry cold, and live on very scanty pasture; but it could never enter into competition with common cattle wherever these can be wintered out of doors without attention.

The water-buffalo, another purely Asiatic animal, is suited to exactly the opposite kind of surroundings to those in which the yak flourishes. It is in its wild state a beast of the hot swamps, where it is quite at home in the mud, owing to its great spreading hoofs, and likes nothing better than to lie up to its ears in water. With

its pig-like, nearly naked hide, and short legs, the buffalo is the ugliest of cattle, but it is also the most intelligent and interesting. Tame buffaloes show a dog-like affection for their owners, even though very dangerous to strangers, for the little native children manage them easily; moreover, they have a great hatred for the tiger, and have been known to rescue their herdsman from his attack. As a matter of fact, many tame buffaloes are really half-wild by descent, for the wild buffalo bulls often cross with the tame specimens, and nothing can be done to disturb a wild bull when he takes up his quarters for a time with a tame herd, for he is about the most aggressive wild beast in existence, and many a sportsman out snipe-shooting has had an unpleasant interview with him.

Tame buffaloes are not so large as wild ones, and have not as a rule such long horns—a point in which the wild beast excels all other wild cattle—but otherwise they differ very little, generally retaining the black skin, though a few are white or fawn-coloured. They are much stronger than common or humped cattle, though very slow, and so in the East they do dray-horse work, such a thing as a heavy horse being unknown in Asia. Moreover, they will live on the coarsest food, and the cows give plenty of milk, so that it is not to be wondered at that they have been taken far away from their native haunts in the swamps of India,



BUFFALOES TO THE RESCUE.

"Tame buffaloes have a great hatred for the tiger, and have been known to rescue their herdsman from his attack."

Assam, and Ceylon. They are kept even in the lower hills in India, and are found right through South-East Asia and the East Indian Islands ; in fact, in these islands they seem to be almost the only domestic cattle, except where banteng are kept. Besides this, they have for many centuries been used in Egypt, and were introduced into Italy by the Medici family, and still thrive in the Roman marshes. It is more surprising to find them in countries with such a severe winter as Hungary and the Balkan States, considering their scanty coats ; but they are kept there, as well as in Asia Minor. They are particularly likely to run wild, and are found in this state in the Philippines, where, however, they have an enemy in the small native wild buffalo known as the tamarao. But the most out-of-the-way place in which they are found is in Melville Island, off the northern coast of Australia, where they were introduced many years ago, and now number thousands. Here they are hunted for their hides.

It is hardly necessary nowadays to point out that these buffaloes have nothing to do with the well-known but falsely named buffalo of America ; this is really a bison, very closely related to the European kind. In fact, the water-buffalo and bison are about as different as any two wild oxen can be, and no doubt the American animal got its name from the idea that any beast of the ox kind must be a buffalo if not a common ox.

The American bison, by the way, has proved too unmanageable to be used as a tame animal, but it has been crossed with tame cattle, the hybrids being known as "cataloes"; they are valuable for their hides, which are worth as much as the whole carcase of an ordinary bullock, being made into "buffalo robes," and they are also better able to find food in winter than cattle are. These hybrids, unlike mules, will breed again, but whether they are useful enough to be worth keeping up as a breed does not seem to have been fully decided.

The sheep is so very ancient a dependent of man, and has been so long subjected to our selection for its improvement as a producer of mutton, and in many cases of milk and of wool, that it is not surprising that the difficulty of fixing on the exact ancestor is particularly great, while the probability of there being several wild species involved in the pedigree is unusually strong. Mr. Lydekker, indeed, in his recent valuable book *The Sheep and its Cousins*, thinks there may have been three; the European breeds having probably descended mostly from the mouflon, which is now only found wild in Corsica and Sardinia, though it formerly had a wider range in Europe, while the Asiatic types came from the urial, which ranges from Persia to North-West India, and probably also in some cases from the red wild sheep, which is at home in Asia Minor and Cyprus, and has formerly been much confused with the mouflon.

All of these wild sheep are much alike in general characters, and differ from tame sheep in much the same way, all having a coat of short thick hair like deer, short tails, and, in the rams, at any rate, large curling horns, while the general colour is some shade of brown. Thus, as far as appearances go, the tame sheep might have come from any of them, but they have varied much in different ways, the European and some Asiatic breeds having developed wool, while the sheep mostly kept in Africa, though no doubt originally obtained from Asia, retain a coat of short hair varied in colour like that of a goat, but still do not look much like the wild animals in other respects. In both cases an unnaturally long tail has often been developed. I have not seen the red sheep alive, but both the mouflon and urial are generally on view at the Zoo, and of the two the mouflon is much the most like our sheep, at any rate; the head has the genuine silly sheepish expression, and the bleat is exactly the same as that of the common sheep. The mouflon and urial are both about the size of the smaller breeds of sheep, but the urial is more leggy and deer-like.

Mouflon live in the hills in their native haunts, among the bruyère shrubs, and are shy and wary. Urial are also hill animals, but range into very different climatic regions; for instance, they are found in Ladakh, where it is intensely cold in winter, and in the Salt Range in the Punjab, where in summer the heat is something

terrific. But no wild sheep is found in low, moist country, which no doubt accounts for the fact that tame sheep are generally so liable to disease in such land, though some breeds have acquired a power of thriving there. Both mouflon and urial will breed readily with tame sheep, and in the case of the former cross it is said that the woolly covering of the tame animal is retained by the cross-bred beast; such a specimen was to be seen some time ago at the Zoological Gardens.

It is plain that the ancestors of our sheep had a restricted range, being confined to a corner, so to speak, of the northern part of the Eastern Hemisphere; and so our agency has given them an enormous distribution, for more sheep, no doubt, are kept than any other domestic animal, and probably this has always been the case since man left the purely hunting stage. Yet, with sheep kept nearly all over the world, and with the many opportunities for emancipation which have occurred in unnumbered centuries, the sheep has never gone back to the wild state; it seems hopelessly incapable of looking after itself, having once submitted to our control.

Mr. W. H. Hudson, for instance, in the most charming of his books, *The Naturalist in La Plata*, gives an instance of this failure of the sheep to return to the wilds. The old breed of pampa sheep, introduced about three centuries back, and now giving place everywhere to the "improved" European breeds, is, he

says, "a tall, gaunt, bony animal, with lean, dry flesh, like venison, and long, straight wool, like goats' hair. . . . They are keen-scented, swift of foot, and wonderfully active, and thrive where other breeds would quickly starve. I have often seen," he goes on, "a lamb dropped on the frosty ground in bitterly cold windy weather in mid-winter, and in less than five seconds struggle to its feet, and seem as vigorous as any day-old lamb of other breeds. The dam, impatient at the short delay, and not waiting to give it suck, has then started off at a brisk trot after the flock, scattered and galloping before the wind like huanacos rather than sheep, with the lamb, scarcely a minute in the world, running freely at her side. Notwithstanding its great vigour it has been proved that the pampa sheep has not so far outgrown the domestic taint as to be able to maintain its own existence when left entirely to itself. During the first half of this century, when cattle-breeding began to be profitable, and wool was not worth the trouble of shearing, and the gaucho workman would not eat mutton when beef was to be had, some of the estancieros on the southern pampas determined to get rid of their sheep, which were of no value to them, and many flocks were driven a distance out and lost in the wilds. Out of many thousands thus turned loose to shift for themselves, not one pair survived to propagate a new race of feral sheep ; in a short time pumas, wild dogs,

and other beasts of prey, had destroyed them all."

I have sometimes wondered, however, whether mouflon have not a certain amount of tame blood in them; surely in the course of their long sojourn in two small islands in the midst of a centre of human civilization some tame sheep must have joined them, and certainly those shown in recent years at the Zoological Gardens varied remarkably for wild animals. More than one black lamb was born, and once one of the proper brown colour with a curious white band round one hind-leg, which looked exactly like a bandage—in fact, I at first mistook it for one. The old father ram of this family on one occasion displayed remarkable intelligence for a sheep; on being given a large piece of very hard biscuit, he butted down on it with his horns in order to break it, thus showing good judgment in meeting a difficulty which would be quite a new one for him. Similarly, he broke a padlock by butting it to get at the buck markhor goat next door, which, by the way, he successfully thrashed; though in this case he may very likely have found out the point of the door to attack by accident and random butting.

It is a curious thing that in this highly civilized group of islands, just as we have had feral cattle in our parks centuries before these beasts ran wild in the new lands of America and Australia, so we still have the wildest and

most primitive race of sheep known, albeit on one tiny islet-rock only.

These are the sheep of Soa, one of the St. Kilda group, which have existed there for hundreds of years in practically a wild state, though collected once a year—with great difficulty and the loss of some by being driven over cliffs—to have their fleece pulled, not shorn. The fleece is short, and often brown, though there are black and piebald specimens ; the tail is short and the horns of the rams like those of the mouflon. The brown animals are marked like mouflons on the legs, but are smaller than those animals and than any ordinary tame sheep—are almost dwarfs, in fact. They must not be confused with the black-and-white so-called St. Kilda sheep often kept in parks ; these are of unknown pedigree, and seem to have nothing to do with St. Kilda, while there is nothing specially primitive about them ; in fact, the rams commonly have the very abnormal character of four horns.

The goat, if not so anciently domesticated as the sheep, is still a very old servant of man, and in the case of many of its breeds departs quite as widely as does the sheep from its wild original. Nevertheless, the common rough-bred goats usually seen are still very like this ancestor, which is still found wild in the mountains of Persia ; indeed, it is commonly known as the Persian ibex, but it also extends in suitable country throughout Asia Minor to

the islands of Crete and the Cyclades in one direction and to Baluchistan and Sind in another. Formerly it used to inhabit the Greek archipelago generally.

The goat has always been noted for its self-willed and mischievous nature ; the very word "capricious" comes from its Latin name, and the contrast of its wilfulness with the meek obedience of the sheep, to say nothing of the goat's strong unpleasant smell and malicious look, no doubt accounts for its being taken as the type of wicked humanity, while the sheep is the symbol of the good folk—though nobody cares to be called "sheepish," for all that. Its independence of character and intelligence, joined to the hardest constitution of all our domestic animals, has enabled the goat to run wild very readily, and, though it is not in favour where sheep and cattle are much kept, it has been carried about even more than they have, and thus has the widest distribution of all grazing animals in the tame state, with corresponding opportunities of going wild again.

Even in Britain there are plenty of emancipated goats living the wild life of the Persian ibex—the ibex of the Alps is a different species which does not come into the pedigree. Mr. Millais, in his monumental book on *British Mammals*, says that such goats exist in North-west Ross-shire, Perthshire, Argyllshire, in the Cheviots, on Mull and on Ailsa Craig, on Achill Island off the Irish coast, and in several localities

in the Welsh mountains. These wild goats have horns like their ibex ancestor, but vary in colour, being often white and pied. The true ibex coat is brown, with black on the face and shins, a colour still very common even in quite domestic races.

Abroad, goats are no doubt to be found wild in every quarter of the globe, though generally on islands, where they have often been purposely turned out in former times to serve as a source of the fresh food then so difficult to obtain on long voyages. In the *Voyage of the "Challenger,"* Moseley mentions wild goats at such different points as St. Vincent, Juan Fernandez, and Inaccessible Island near Tristan d'Acunha, though in the last-named case they are spoken of as things of the past. The Juan Fernandez goats are the descendants of those hunted by Alexander Selkirk, the original of Robinson Crusoe, whose appearance in his home-made goat-skin suit, "the hairy side out, and the skinny side in," like Brian O'Lynn's trousers, is so well known to us from our earliest picture-books.

The goats turned loose on St. Helena in 1502 have earned for themselves undying infamy in the scientific world by eating the island forests, which contained a peculiar tree, the so-called ebony, and many other plants growing nowhere else, off the face of the island; not until 1731, when they had done their worst on the young growth, and the old trees had mostly fallen, was

an order issued for the destruction of all stray specimens of the depredators.

In continental areas one does not hear much about escaped goats, though, on account of their intelligence and hill-climbing powers, they always have a far better chance of survival when left to themselves than any other of the smaller farm stock except the pig. The animals called bush-goats in West Africa are, however, not true goats, but antelopes, just as the "bush-cows" are not wild cattle, but the small red Western race of the African buffalo.

VII

THE OTHER DOMESTIC ANIMALS AND INTRODUCED WILD BEASTS

ALTHOUGH the Deer family generally do well and breed freely in captivity, they are not so well adapted for domestication as the hollow-horned ruminants of the ox and sheep family, and but little has been done in taming them or transferring them abroad, though there are a few striking exceptions.

The reindeer, which in its wild state is found all round the world in the high north, the American deer known as the caribou being only a local race of the species, has only been domesticated in the Old World; but there, under certain conditions, it is the only large domestic creature, and, as is well known, fills the place of both horse and cow, as among the Lapps. It is also kept all through the north of Asia, but towards its southern limits it has for domestic companions the horse and the two-humped camel.

These tame reindeer have been introduced and allowed to run wild in Iceland, and of late years thousands have been transported to Alaska, where, whether they are used as tame

animals or allowed to go wild and reinforce the "caribou" race, they will be a most valuable asset to the country.

The fallow-deer can hardly be called fully domesticated, as it is not subjected to any restraint but that of a park fence, but it has been more widely distributed than any other deer. Its natural home is the countries surrounding the Mediterranean, and though there is no historical account of its introduction into our island, the Romans are credited with this. Of late years many have been allowed to run completely wild in Scotland, and Mr. Millais says that these beasts, half-tame though they have been for centuries, are far better able to look after themselves than the really wild native red deer, being exceedingly wary and inclined to keep to cover and not expose themselves in the open. They have also been introduced into south Sweden and into Russia, and probably are to be found semi-domesticated all over Europe. Introduced fallow-deer are also found in Tasmania and New Zealand, though one does not hear so much about them in the latter country as of the red deer shortly to be noticed; they have also been turned out in one of the West Indian islands, and I have heard of them, too, in one of those of the Pacific, where I was told they had increased to the point of being a nuisance.

The most truly wild specimens in the southern parts of our country are in the New Forest

and in Epping Forest. The New Forest deer are of the typical fawn-coloured, white-spotted race, and are said to date back to the days of Canute, while the Epping deer are of the sooty and unspotted variety which is not known in the wild haunts of the species.

The red deer, which in its wild state originally ranged over Europe generally, with the northern parts of Africa and Asia Minor, has disappeared from all the more highly cultivated parts of its range, except where specially preserved; but it has during the last century secured a foothold at the opposite end of the globe, having been introduced with great success into New Zealand, which colony now prides itself on the deer-stalking it can offer.

The pioneer specimens were sent out in 1850, according to Mr. Millais in his book on *British Deer and their Horns*, published in 1897, and were turned out on the Nelson Hills. Other specimens followed, presented by the late Prince Consort, and the number soon increased, but they were driven away from the cultivated country on account of their destructiveness, and forced to take to the wild hilly districts. They seem chiefly to occur in the Maungaraki, Wairarapa, and Cromwell districts, and the great superiority of their antlers to those of home-bred wild deer is well known; some fine specimens were on view in the New Zealand section of the recent exhibition at Shepherd's Bush.

The improvement in the British red deer when

transferred to their new home is no doubt due to their having got back to natural conditions ; deer do not naturally frequent open, bleak, treeless country like the so-called forests of the Highlands of Scotland, where we now expect them to live. They should really have shelter, and plenty of browsing on trees as well as grazing, besides which they need a great deal of space compared with such animals as sheep, being wasteful grazers. Mr. Millais points out that the position of the New Zealand deer is similar to that of the Scotch stags in the early part of the nineteenth century, when the country had plenty of forest, was but little enclosed, and the stock of deer could not have been very large.

The number of deer originally introduced into New Zealand was very small, a stag and two hinds having been the sole ancestors of many of them.

Closely allied to red deer are the magnificent large stags known as wapiti, and one race of these, the wapiti of the Altai, which has the largest horns of any living deer, is kept in large herds by the local natives for a very curious reason : the Chinese set a great value on growing deer horns, which are supposed to possess medicinal qualities ; they will pay, according to Mr. Lydekker, as much as ten pounds for a fine specimen. With the indifference to animal suffering which primitive people seem to show everywhere, the owners of

these unfortunate brutes do not kill them for the horns, but actually saw these in their living growing state from the animals' heads. If this inhuman practice could be stopped there would be no objection—rather the reverse—to this taming of the finest deer at present existing ; at any rate, it shows the beasts to be possible subjects for multiplication under man's control.

The various races of the sambhur deer take the place in Southern Asia which the red deer and wapiti fill in the north ; they are stoutly built animals with big horns, which, however, are very different from those of red deer, only having three points ; the finest and largest are found in India, where they are as big as the best red deer, and have very massive horns. East of India they degenerate in size, especially in the Malayan Islands, some of these little island sambhur being no bigger than our roebuck.

The Indian sambhur has of late years been introduced into New Zealand, and seems to be doing well ; and the Javan sambhur or rusa, as it used to be called when it was considered a distinct species, has long ago been naturalized in Mauritius. It is thought likely that the races of sambhur found in the Moluccas and the Marianne Islands have been artificially introduced ; and certainly the deer now found in the Aru Islands, of whose present existence I have heard from my friend Mr. W. Frost, must have been brought there by man, for these

islands are far out of the range of any deer. I do not know, as a matter of fact, whether these are sambhur at all, but this is much the most likely kind to have been carried there.

The common one-humped camel has been known as an Arabian animal from time immemorial, but always as a tame beast ; however, Arabia may very well have been the place where it was first domesticated. It is worth noting, however, that fossil bones of camels are found in the Siwalik Hills in India, where other animals of types now chiefly known as African occur, such as the ostrich, which still lingers in Syria. The camel may therefore have ranged over the drier parts of North-East Africa and Asia before human times or in the earliest period of man. In the earliest human records it was well known ; everybody is familiar with the references to it in the Old Testament, and Herodotus mentions that he will not trouble to describe it, as the beast was already well known to the Greeks ; but he goes out of his way rather amusingly to make a mistake about it, by saying that it has apparently escaped their attention that in the camel's hind-legs there are two thigh-bones and four knee-joints. There are, of course, only the usual number of bones in this animal, but the " stifle-joint " is let down unusually low. This camel as a domestic beast was, and is, used all along the northern half of Africa, in Egypt, and through Western Asia into Northern Asia ; generally,

be it observed, in dry countries, and generally in hot climates, though in Afghanistan it has to bear severe cold. It is a good hill-climber, although supposed to be especially adapted, as it doubtless is, for more or less level and open sandy ground; but it is well known to be so awkward on wet soil that it is liable to slip and dislocate its hind-legs—"when 'e comes to greasy ground, 'e splits 'isself in two," as Mr. Kipling says. Still, camels can be, and are, reared in marshy districts, and those "grow up bog-trotters." This makes it less astonishing that in the only place where camels have run wild, at any rate in modern times, they have been able to adapt themselves to a semi-aquatic life; for this is the case with them in the Spanish marshes, where they have now lived quite as wild animals for a good many years, spending much of their time wading about in the water. These Spanish marsh-camels are the descendants of an ancient importation which were allowed to go wild; and camels have long ago been established in Italy, Ferdinand de Medici II having established a herd near Pisa in 1650; but this has never become very numerous, and a quarter of a century ago only numbered a couple of hundred specimens. The camel is, in fact, not likely to establish a footing in Europe, where the ox and horse are freely available in the mostly well-cultivated country; he is an animal only useful, like the water-

buffalo, in special conditions, in this case those of the desert. For this reason he has become very popular in Australia, where the first specimens were taken in 1860 for Burke and Wills's exploration; Warburton also showed their utility in crossing the great Central Desert with a camel-caravan, and in 1884 the Australian force at Suakin had a chance of reviving the interest in these animals by practical association with them. Major Leonard, in his very useful book on the Camel published in 1894, from which I have taken some of these facts, gives the number of Australian camels at 2000; and I may mention that the introduction of the camel has resulted in the addition of a new human element to the Australian population, the men who work with camels being Afghans. In this we have a curious parallel to the Indians who served as mahouts for elephants in classical times, often far from India. About 1857, according to Major Leonard, a single pair of camels, the sole survivors of a small consignment, were sent to Nevada as being desert enough to suit them, and had increased by 1875 to ninety-six—so it is said; but there seems to be no recent news of them, and the authority I have quoted, who has had many years' practical experience with camels, points out that fifty per cent of the young born are supposed to die. However, there are many instances to show, as may be inferred from other facts given in this section,

that in a new country animals will increase with quite extraordinary rapidity if the conditions are favourable, owing, no doubt, to the ground being "new," i.e. free from the competition of others of the same species.

The other kind of camel, the two-humped or Bactrian, is also very probably entirely a tame animal, for though there are wild herds in the neighbourhood of the Gobi desert, these are open to the suspicion of having been "escapes" from a historical devastating sandstorm, which annihilated their owners wholesale. At any rate, judging from the Museum specimen, they look wild—for camels, being comparatively slightly built, with small humps, compared with the tame Bactrian camel, which is much more heavily built than the one-humped or Arabian. It has quite a different range, too, from that animal, being the characteristic camel kept in Central Asia, where it extends far enough north to meet the reindeer; it is also employed in China and in Southern Russia—in fact, it ranges all across the Steppe region, and is the "common carrier" of that vast extent of country. It thrives particularly well in England, and the pair in the London Zoo breed every year. The reason why this species, enduring cold and damp well, has not been more widely spread is no doubt due to the fact that, like the common camel, it only pays to employ it in wild countries. Camels are very easily satisfied in the matter of food, and so can be kept for a

mere nothing, or can "live on the country"; but they are not great weight-carriers for their size, and are very slow, and ill-adapted for draught-work, so that, as above remarked, they cannot compete with horses and oxen in countries where these can be readily maintained.

Moreover, they are of a singularly unsympathetic disposition; no camel ever seems to get fond of its master, nor does anyone feel enthusiasm for such a cold-blooded creature, while horses positively dislike them, as has been known from ancient times.

The only other animals of the camel family are the South American llama and vicugna, which are much smaller animals with no humps. Indeed, the early writers on South America called the llama, which was the only large domestic animal kept by the Peruvians—or by any native Americans, for that matter—a kind of sheep. The llama is the domestic descendant of the wild guanaco, which is found all through southern South America, in mountains and plains alike. Even in the days of Augustin de Zarate, who gave the first account of the beast, there were two established breeds: the llama proper, which was used as a beast of burden; and the alpaca, which is remarkable for the length of its fleece, from which the well-known alpaca cloth is made.

The llama's use as a pack-carrier in its own country has declined a good deal since the days

of the Spanish conquest, owing to the competition of the introduced donkeys and mules, so that it is not wonderful to find that it has not been transported abroad except as a curiosity to be kept in zoological gardens or private parks.

Mr. Wingate has been very successful in breaking these beasts for riding, and it is astonishing to see how an animal not bigger than a fallow-deer can carry a full-grown man with apparent ease. Don de Zarate, however, whose countrymen tried the llama as a mount, mentions that the animal would turn and spit in its rider's face when overdriven—a rather different picture from that drawn by Eliza Cook, who in an imaginative poem credited it with dying of a broken heart under these circumstances, though it is to be admitted she called this its "fabled power." The attempt to introduce the wool-bearing alpaca breed into Australia was tried and failed, but would be well worth repeating in a cool climate, as would the experiment of Curé Caprera, who crossed the alpaca with the vicugna, an animal of the high mountains and otherwise undomesticated; it has a very fine and valuable wool, and the cross, which was fertile, also bore an excellent fleece.

The exact range of the wild ancestors of the pig is not quite certain, as pigs run wild very easily, and it is doubtful what is their exact natural limit in a south-easterly direction in

the East Indian region. The common wild boar, which only became extinct in Britain in the Stuart period, ranges throughout Central Europe, North Africa, and Western Asia; the Indian and Burmese wild boar does not differ in any very important point, and no doubt from these two, and probably from the Javanese boar (if this is a truly wild race) are descended the tame pigs which are now found nearly all over the world. Setting aside races like the New Guinea boar, which lives in such an out-of-the way region for true wild pigs that its wild origin is doubtful—especially when we consider that pigs were widely kept even in the Polynesian islands when these were first investigated—there is no doubt about the ancestors of the wild pigs in many countries having been imported by man. Such are the pigs of New Zealand and Australia, for instance; the first seen in the former country were imported by Captain Cook, and their descendants are now so wild that they resemble wild boars in all points except in still keeping the concave profile seen in most tame pigs, the face of the wild boar being straight. As to the Australian wild pigs, an Australian rancher who was on board a ship in which I was once travelling home from India, was convinced that they were so nearly like wild boars that, he told us, he had been telling Calcutta sportsmen, who were devoted to “pig-sticking,” that the Australian cowboys would not fear to ride down and rope

the true Indian wild boars, fierce as they are, and that he would be willing to bring over men to show it done. Pigs have also, according to Darwin, run wild in Jamaica ; and Moseley, in his *Voyage of the "Challenger,"* records them as living wild not only in Tahiti, where they feed on wild fruit, but in the bleak Crozets and Inaccessible Island in the Southern Ocean, where their food consists largely of penguins and such other sea-fowl as they can manage to catch. As he says, in its power of adaptation to such different conditions the pig approaches man ; but if we regard the European and Indian boars as practically identical, we see that the wild race bears a range of climates as extreme as North Germany and Burmah, while everyone knows how carnivorous pigs are.

In considering the range and pedigree of the horse, we have first to get out of our heads the idea that it was at all different in essential characters, when our very remote ancestors first met with it, from what it is to-day. That is to say, early man never hunted the "two-toed horse," as one poet makes him say ; first, because there never was a race of horses with two toes at all, and secondly, because the race of three-toed horses—with a small, useless hoof on each side of the main hoof, belongs to a period before human times. Moreover, the name "horse" is only applied to these creatures in a general sense ; for all we know they may have looked more like donkeys or zebras ; they

were the ancestors of the horse family as a whole, not of any particular species. Thus, although the tracing of the equine pedigree, by means of fossils, up to creatures which had several toes and could not by any possibility have been called horses, is of the greatest interest from the evolutionary point of view, it must be clearly understood that it has nothing to do with the relations of the species we now call a "horse" with ourselves.

The wild horse was an animal of far more northern and wider range than any of the asses or zebras; it inhabited Northern Europe in the age of the mammoth and reindeer, and was an important game animal for early man, who has left sketches of the beast in his bone engravings found in the French caverns. From the evidence of these drawings and of bones we know that these early horses were small—ponies, in fact—and had large, heavy heads like donkeys or zebras; in fact, they very closely resembled the wild horses now living in Mongolia.

But, although classical and mediæval writers often mention wild horses in Europe, it is not certain at this distance of time whether these horses were the actual descendants of the Stone Age horses, or beasts which had run wild and assumed the characters of wild animals; and, of course, considering the disturbed state of some part or other of Europe during all the historical period we know anything about, there has been ample time for horses to run

wild many times over. Some of these animals lingered on in Europe till within the last half-century ; these were the " tarpans " of Russia, but the purity of the wild blood of these was considered doubtful by naturalists. At any rate, it is known that they were much mixed with tame horses ; the race ranged east from Russia to the Altai. Colonel Hamilton Smith, in his book on Horses in the old Naturalist's Library series, says that Tartars and Cossacks were quite able to distinguish between really wild horses and those which were merely renegades ; this can well be believed, for all these people are horsemen, and anyone who is well used to studying any particular type of animal soon learns to distinguish differences not noted by an outsider.

The purest tarpans, according to the account the Colonel got from Russian officers of the Cossacks, were found " on the Karakoum (south of the lake of Aral), and the Syr Darya, near Kusnek, and on the banks of the River Tom, in the territory of the Kalkas, the Mongolian deserts, and the solitudes of the Gobi."

They lived in herds of several hundred, made up of smaller troops headed by particular stallions ; they were very wary, and the old stallions led and rounded up their own troops ; the young ones had to keep their distance till they were strong enough to fight their elders and get a troop of their own. This is just the way in which horses which have run wild behave ; they always

keep up the herding habit, and the stallions exercise strict control over their mares. One has even been seen to drive, by cruel kicks and bites, one of his wives away from her little foal, which could not follow the herd, and make her leave it to its fate. The tarpans, as described to Colonel Hamilton Smith, liked open, elevated country, and it is noticeable nowadays that horses when they run wild keep to the open, while cattle, on the other hand, seek for forest or bush. These Steppe horses migrated according to the season, but only if of the pure race.

In spite of the good account thus given of these wild horses, the Colonel's work in elucidating their history had been forgotten; but the discovery of the so-called Przevalsky's horse as recently as 1881 revived interest in the subject. As Mr. Lydekker points out in his book, *The Horse and its Relatives*, Sir William Flower in discussing the supposed new animal made no mention of the Colonel's researches, and suggested that the beast might really be a wild mule between the horse and the Steppe race of the Asiatic wild ass, known as the kiang. This original specimen came from Zaisan, but twenty years later the great German animal dealer, Mr. Carl Hagenbeck, scored one of his triumphs by getting a whole herd of the supposed new wild horse from Kobdo, in Western Mongolia, for the Duke of Bedford. These had been caught as colts, for it



STALLION DRIVING MARE FROM HER FOAL.

seems to be impossible to catch the old animals, and tame horses were used as foster-mothers for them. Other specimens and skins had already reached St. Petersburg, and it has become plain that Przevalsky's horse was simply a specimen of the old original wild horse, which still survives in these remote regions, though even here its blood is liable to be intermixed with that of tame horses. A specimen, at the time of writing, in the London Zoological Gardens, for instance, has a distinctly dropping mane, and does not look nearly so wild as one—not now exhibited there—which had a hogged mane and looked very much like a coarse zebra without the stripes.

The wild horse, however, has a bushier tail than any zebra, though the hair becomes shorter towards the root, where it is coloured like that on the body ; this body-colour is dun, but the muzzle is white, and the fronts of the legs are black, as are also the mane and the long hairs of the tail. In fact, the colour can be exactly matched among many tame horses of the coarser breeds, and the only really noticeable difference is that the true wild horse shows rather less of the long hair, having no forelock and, as I have just said, a tail not so uniformly bushy. The size is that of a large pony, and in connection with this everyone will recall that ponies are hardier, longer-lived, and surer-footed than large horses ; one hardly ever sees a pony fall, and they are often remarkably

intelligent and self-willed. This shows that the pony size is the natural one for the horse, and any increase of it can only be got under specially favourable conditions of feeding, and even then means some loss of constitution and activity.

The coat of the Mongolian wild horse, as might be expected in an animal living in a climate with such bitter winters, changes a great deal with the seasons ; it is short like a zebra's in summer, and thick in winter, when it forms quite a beard along the jaw ; changes of this sort are familiar in our ponies when allowed to rough it all the year.

Such ponies can be seen on the Devonshire moors, where they lead a very independent life till caught up for sale ; but these are much handsomer to look at than the real wild horse, having very full manes and tails. In fact, the tame horse, when at all well bred, is one of the few animals that is handsomer than its wild ancestor and relatives ; it will be noticed that all wild equines resemble the tame donkey rather than the horse in having a big head, a hog mane, and a mean switch tail carried close to the hind-quarters. Burchell's zebra is far the handsomest of the lot as far as shape goes, and looks most like a good horse.

The great difference, not only in appearance, but in colour and temper, between coarse and wild horses and the finest tame breeds, has led Professor Ridgeway to think that the beautiful, swift, and docile horses which seem to have

existed in North Africa as much as a thousand years before our era begins, really descended from a separate race of wild horse which inhabited this part of the world and was tamed there by the natives. Horses of this thoroughbred type are seen on the Assyrian and Egyptian monuments; the Arab is a more modern representative of them, and it is well known that the ancients always, from the earliest times, knew of the goodness of the horses of the West of their Mediterranean world. Bay, not dun, is the characteristic colour of this type of horse, as is well seen in our English thoroughbreds, and its speed and temper are better than in the small, coarse types which can be traced back to high Asia. It is quite possible that if there was a North African wild horse at all distinct from the European and Asiatic race, it was richer and darker in colour than its northern relatives, and it may very well have been slenderer in form and less fierce in temper, for animals with a wide range generally grow coarser and fiercer as they range into colder climates. Certainly the primitive horses of the Greeks seem to have been very ill-conditioned brutes if the classical legends of man-eating horses have any foundation in fact; and this they may have, for the northern tribes of the world often give their horses fish and other animal food.

But the well-bred horse shows certain points which seem to be the result of man's selection

of the best animals from his point of view ; the size, for one thing, though even this is not large in the Arab and his nearest kin—for the southern forms of animals tend almost always to be small. Then the small head and full, well-carried tail of good horses are utterly different, as may be judged from what has been said above, from any of the points of all the really wild members of the horse family known, and the reason of the difference seems very plain.

In nature, horses, using the term in the sense of the whole equine family, must live on coarse pasture, and the stallions can only get mates by fighting for them ; so there is a strong reason for the survival of the strongest-jawed, and therefore the coarsest-headed specimens—with, of course, corresponding tempers. Great speed is not so much needed, for wild horses have the instinct of bunching together to defend themselves against foes ; even among our civilized horses, those which have any idea of fighting, as Colonel Roosevelt says in his charming book *Hunting Trips of a Ranchman*, do not fear wolves. He even gives a case in which a savage stallion, left grazing at large, one day came into camp with claw-marks on his quarters which suggested he had been having an encounter with a bear ; and a search-party soon discovered a member of the “grizzly” species in the neighbourhood with a broken jaw, indisputably a memento from the horse’s heels. Horses also, as is well known, bite very

severely, not only in conflict with their own kind, but when engaged with other foes; another reason for survival of the big-heads. Now man requires the very opposite points—speed and docility; and these go mostly with a small head and dark rich colour, although of course there are a good many excellent light-coloured horses; so that, as the horse has been so important to all fighting races for thousands of years, it is not surprising that those points we consider as characteristic of good blood have been well fixed in all breeds anciently esteemed for their value; while under our management the well-bred horse is not allowed to fight his rivals and is protected from enemies, while his owners take care to provide him with a sufficiency of really good and nourishing food, so that here again his jaws tend to diminish rather than increase in size.

The particular point—as to whether we have two varieties or races of horses in domestication or not—has, however, no very great importance from our present point of view—man's agency as a preserver and distributor of animals; both types have long been well mixed up, and man has tried to take them wherever he can live himself, with the result that many horses have regained their freedom in different parts of the world. We have already seen there are plenty of such "feral" horses in Northern Asia; but there are none in the tropical parts of that continent. In fact, in the damper parts of the

tropics the horse does not do at all well ; even in a domesticated state he requires care, and never grows to a large size. Possibly, however, when these parts of the world become more civilized, and people get dissatisfied with the slowness of oxen and still more of buffaloes, big horses may be bred by degrees, though they will always have to face the competition of the mule and the motor. In Africa, south of the Sahara, the horse is still less at home, and is liable to various kinds of diseases, such as that borne by the tsetse fly, and the well-known "horse-sickness" of the Cape, a region which otherwise ought to be well suited to horses. So it is not astonishing to find that no horses have run wild in Africa, except the "kumrahs" of Nigeria. In America, however, there are, or have been, numbers of them, dating back to the early days of the Spanish conquistadors. Every boy has heard of the mustangs or bronchos of the prairie lands of North America, while numbers still exist in the southern part of the continent, from the La Plata river to Patagonia. It is known that all these were descended from a dozen animals left behind by the Spaniards in 1535, after the failure of their first settlement at Buenos Ayres. It is a curious fact that, according to Azara, most of these "baguales" were bays, while the North American wild horses, which also descended from a very few individuals, were of many different colours, and many of them dun.

In Australia many horses ran wild, and their descendants were known as "brumbies," but these have generally been despised by the colonists, who yield to no one in the world in their appreciation of a good horse; moreover, the pasture they consume is all wanted for useful stock, and so the horses have been much persecuted, and only a few seem to survive at the present day, in the high and rugged parts of East Gippsland.

In the Falklands horses have also run wild, but here the conditions of life are not very suitable to them, the ground being so soft that their hoofs have a tendency to overgrow so much that the animal becomes practically crippled in consequence. Before leaving the subject of feral horses it is worth while to mention a curious zoological puzzle: the fact that equine animals of some sort had inhabited America in past geological times, some of them surviving till primitive man appeared on the scene, at any rate in South America; yet all these had become extinct when the country was rediscovered by Europeans. With their extinction the cause of it must have more or less ceased to act; at any rate, though the puma is a deadly enemy to colts, and these suffer so much in Paraguay from a parasitic fly that horses could not run wild there, the modern horse has nevertheless, as we have seen, been able to establish itself over a very wide area in both halves of the Western Continent.

The ass, the poor and despised relative of the horse, is just as good a beast as he is in the primitive state ; at any rate, as anyone may see at the Zoo or the Natural History Museum, there is hardly a "hand" between them in the matter of size, and the wild ass has a very fair turn of speed, and is probably as fast as the true wild horse. This ancestor of our donkeys is an African animal, living in the desert north-eastern parts of the continent, in Abyssinia, Nubia, and Somaliland. The typical race is just like a grey donkey in colour, with the same cross on the shoulders formed by the black spine and shoulder stripes, but is much bigger than the donkeys we usually see in this country, though the fine riding-donkeys of the East are at least as large, and the mule-breeding "jacks" of France are much bigger. The Somali race has usually no cross on the back, but is well barred with black on the legs ; but these leg-stripes are also often found in the other race, and in our tame donkeys also, for that matter.

As might be expected from the climate of the native land of its ancestors, the tame donkey, although it is widely distributed over the world, does not bear really extreme cold so well as the horse, as Herodotus had noticed ; and so it is not kept in very northern climates. In many hot, dry countries, however, it is of more use than the horse, and in Africa it has the special advantage of not suffering nearly so much

from the tsetse-fly disease, although not absolutely immune to the poison. Wild donkeys used to exist in South America, and the island of Socotra is stocked with them, but for some reason or other donkeys, in spite of their general hardiness, do not seem to have run wild so readily as horses have done.

The wild asses of Asia, the onager of Persia, which was hunted by the Assyrian kings, the ghorkhur of Western India, the chigetai of Mongolia, and the kiang of Tibet, are races of a quite different species, of a more or less deep brown instead of grey colour, and without a shoulder-stripe. In shape and size, especially the chigetai and kiang, they approach the horse; and the ghorkhur must have been tamed at some time, because Herodotus distinctly says that some of the chariots of the Indians in the wonderfully mixed army which Xerxes led against the Greeks, were drawn by wild asses; but none of the types are worked nowadays, and none have been carried away from their native deserts and steppes.

Neither has the domestication of the beautiful Burchell's zebra, which seems formed by Nature to be the domestic horse of Africa, proceeded very far as yet, so that the horse and common ass remain as the only reclaimed equines.

The dog, as the most widely distributed of all tame animals—for hardly any savage tribe is without some sort of dog, even if there are no

other tame animals kept—is very likely the most ancient of all the companions of man, and so it is particularly difficult to trace his ancestry. We can, however, be certain of one thing: the early breed of dog was very like a wolf or jackal. On the one hand, it could not have been at all like any of the well-marked tame kinds, such as spaniels, greyhounds, or mastiffs, because none of these are like any kind of wild canine which exists or has been known to exist, while we know that the shape of animals can be much altered by selective breeding, and that this is still being done; for instance, the bulldog shown in the old bull-baiting prints is hardly at all like the show specimens of the present day. On the other hand, we must also exclude some of the wild canines from the possible pedigree, because no tame dogs are like any of these; such are the various foxes, the dholes or so-called “wild dogs” of Asia, and the hyæna-like hunting-dog of Africa.

But if we look at the pariah dogs of the East, we shall find animals which are undoubted dogs, but dogs of a very wolfish or jackal-like type, with sharp noses, prick ears, and long legs, and averaging about the size of a collie. All I have seen in India and East Africa were close-coated, like a fox-terrier, and generally tan in colour, sometimes pied with white, or sometimes black with more or fewer white markings. The dingo of Australia, though it has a bushier tail and is a really wild animal as far as habits go—though

a few are trained by the native blacks—is most obviously of the same race as these street dogs, and is also usually of a tan colour ; but nowadays it is much crossed with tame dogs. Indeed, it is strongly suspected of being a renegade tame dog itself, though in that case man and his yellow dog must have got to Australia very early, because dingo remains have been found associated with those of extinct marsupials. I used to think that perhaps all the pariahs of South-East Asia, at any rate, were the descendants of an animal which had left the wilds altogether to attach itself to man, just as some smaller creatures have done, but at that time I had never seen any wolf-coloured tame dogs, so that I had a difficulty in believing that dogs could be really only tame wolves. Of late, however, I have seen the peculiar black-ticked dun of the wolf in several toy breeds, and a couple of Indian wolves received last year at the Zoo, when in short summer coat, struck me as exactly like some pariah dogs, except for the colour. I find, also, that Darwin states that Blyth found a brush-tailed race of pariahs in the Cawnpore district, which were much like the Indian wolf, so that I am inclined to agree with those who would look on the wolf as the real parent, or one of the parents, of our dogs. The Indian wolf is the most likely race to be the original dog, because its size is about that of the best-developed pariahs and the most natural-looking breeds of tame dogs, such as

the smooth collie. It is noticeable that sheep-dogs, which have been bred for ages for practical purposes, still depart little from the wolf; in fact, the prick-eared German sheep-dog is remarkably like one, as is also the Norwegian elk-hound. Mr. R. I. Pocock has also well pointed out that the black-and-tan pattern so common in tame dogs of all sorts and sizes, is simply that of the wolf intensified, the black-ticked parts of the coat becoming all black, while dun turns into sandy red. I may say that I myself once saw at a dealer's what appeared to be a true wolf of black-and-tan colour, though the light parts, which were just as in a black-and-tan dog, were rather of the wolf's dun. A very similar case is furnished by the modern black-and-tan breed of rabbits, of whose descent from the common rabbit there is no doubt.

As the dog readily attaches itself to man and follows its master everywhere, it no doubt has shared nearly all the migrations of humanity; at the same time other canine animals have undoubtedly been tamed, and the blood of these may have been mixed with that of our dogs in various proportions. Thus, the large Egyptian jackal, which is very much more dog-like than any of the other jackals, and is nearly as big as the Indian wolf, has probably had something to do with the ancestry of African dogs; I do not think the Indian jackal comes into the question, as it does not look

nearly so like a dog, and its horrible call "Dead Hindoo, where, where—where, where," is quite unlike any of the noises dogs ever make, while the howling of wolves is like that of dogs, and they also readily bark when in captivity.

There is no doubt that the large wolves of the northern parts of the world have been much crossed with dogs. Pliny expressly says that the Gauls made these crosses, and the Esquimaux and Northern American Indians do so at the present day. In fact, their sledge-dogs must have more of the blood of the northern wolf in them than any other, and they are pretty wolfish in their behaviour at times, and not by any means safe company for children, or even adults, when hungry.

It is worth noting that even these reclaimed wolves, or half-wolves, hate and fear the wolf like civilized dogs in Europe, which are often devoured by wolves, which removes a possible objection to the wolf-ancestor theory. In this connection, however, it is interesting to note that one does not hear of wolves preying on dogs in India, which may point to the close blood relationship above suggested between the dog and the small Indian wolf. It is also to be noted that even sledge-dogs are smaller and less powerful than the big northern wolves, and every dog-fancier knows that it is not so easy to breed good specimens of the big kinds of dogs as those of the medium sizes, while the very small toy dogs are more difficult subjects

still, another argument for the Indian wolf as the ancestor.

The small prairie wolf of America, or coyote, has also been tamed by local Indians, as have one or two of the fox-wolves of South America, but these are more remote species, and in any case can hardly have had much share in the canine pedigree; they merely serve to confirm what has been shown by experiment with typical wolves and jackals, that all the most dog-like of the canine family are easily tamed. The main ancestors of the dog, then, were probably wolves of a small southern old-world type, with perhaps a dash of large jackal blood, so that the dog, as we have it now, has in all probability been carried farther afield than almost any other domestic animal, having in view what has been said above about its almost universal distribution in the tame state.

Even if we put the dingo out of the question, too, wild dogs have been artificially established in many countries. They are found in Cuba, S. Domingo, La Plata, on Juan Fernandez, Juan de Nova in the Indian Ocean, and in New Zealand, and they would establish themselves in Europe and become something very like wolves again were it not for our supervision, for though the dog does not run wild nearly so readily as the cat, being of far more ancient domestication and less independent character, the sheep-worrying specimens which often turn

up show a decided inclination to go back to the life of the wilds.

It would seem almost incredible that anyone could be foolish enough to introduce such a rascal as Reynard the fox anywhere abroad : yet this has actually been done, and this " slim " beast, whose natural home is Europe and Northern Asia, has gained by our favour a footing in Australia, where he was introduced as an object of sport and a foe of the rabbit. As might have been expected, he has got entirely out of hand, and does not by any means confine himself to rabbits, but attacks lambs as well, and is a serious foe to those of the native birds which nest and live on the ground, especially to the beautiful lyre-bird, one of the especial glories of Australian bird-life.

Another interesting point in man's relations with the fox is the domestication in North America of the red fox found there, which is practically only a local race of our fox. This has been brought about by the demand for the silver-fox fur, about the most expensive skin in the fur trade. The silver fox is not a distinct species, but is a variety of the red American fox, with a black coat more or less silvered over by white hairs. The intermediate form, which is part red and part black, is called the cross fox. Silver foxes, being only freaks, like white black-birds, are always rare in nature, and the aim of fox-breeders is to raise a regular race of silvers by selecting specimens of this colour to breed

from, for the common red fur has little value. It is found that, though a pair of silver foxes may produce red young at times, by careful selection a breed of pure silvers may be produced, and a good income can be made by the sale of their skins, though at present silver foxes are worth twice as much alive as dead, owing to their value for breeding others of the same kind.

The foxes are kept in yards enclosed with wire-netting, and fed very much the same as dogs ; it is found not advisable to give them very much meat when in captivity.

Although such a particularly familiar domestic animal nowadays, the cat, historically speaking, is a comparatively new creature as a companion of man in Europe. Nor does it descend from the European wild cat, though no doubt a certain amount of crossing has taken place. The real ancestor of puss is the common wild cat of Africa, a beast which is very widely spread over that continent, varying somewhat in different localities. In South Africa Mr. W. L. Sclater, in his work on the mammals of that region, describes it as a fierce, bold animal, not at all afraid of approaching human habitations, and a great poultry thief, besides being an enemy to kids and lambs at times. The domestic tom-cat has a bad time of it when it meets the wild cat, which is naturally inclined to seek a mate among the tame ones ; in fact, in wild parts of the colony

it is almost impossible to keep a tom-cat on this account. The African wild cat is extremely like a thin, short-coated tame cat, only scantily marked with stripes, which are chiefly found on the head, legs, and tail; the body-colour is a rusty grey. No cat-fancier would look at it twice, but it would hardly be taken for a wild animal by anyone used to the neglected tame cats of the East, which have to look after themselves, and show a strong tendency to the "bunny-coloured" fur rather than to the tabby markings; it is obviously the common cat in an unimproved and uncivilized condition. Brehm states that a Soudanese specimen he got was untamable, but of course an old animal is not good material for experiment, especially among wild cats; I soon succeeded in taming a kitten of the big, long-eared serval in East Africa in 1892, although it was a perfect little demon at first, and I have heard of a very tame and affectionate specimen of the Indian leopard-cat.

At any rate, the Egyptians had tamed the local race of the African wild cat at some very early period, and thousands of its mummies have been found—they have even been exported as manure, a sacrilege which would have horrified the ancient Egyptians.

The following extract from Herodotus's second book will give an idea of the status of the cat in Egypt in his day: "When a fire breaks out," he says, "the cats become super-

naturally possessed ; for the Egyptians stand apart and keep watch over them, without thinking about extinguishing the fire, while the cats dodge through the men and jump over them and rush into the fire. And when this happens the Egyptians are plunged into the deepest sorrow. And whenever a cat dies naturally in any house, the inmates shave their eyebrows ” ; when it was the case of mourning for a dog, he adds, they shaved their heads all over.

The passion for “suttee” which Herodotus describes does not seem to have left any traces in the cats of the present day ; obviously, if there is any truth in the story, all cats with this peculiar craze would by degrees have become eliminated, leaving only those rational specimens which can look at a fire without wanting to jump into it. One curious propensity they seem to have retained, to some extent, a habit which Herodotus says was the only reason why Egypt was not absolutely overrun with cats. This is the jealous custom of the tom-cat of destroying the kittens ; an instance of this occurred at my parents’ house at the very time when I was reading Herodotus at Oxford, so that it naturally impressed itself on my memory. Our cat had three kittens, one of which mysteriously disappeared, while another was actually seen to be carried off by a tom-cat on the very day of its birth. This second kitten was found in

a cottage in the possession of the tom-cat, which was playing with it as if it were a mouse, and had inflicted such injury on the poor kitten's head that it died in a day or two.

In spite of the proverb about cats not liking to wet their feet, it is probable that the Egyptian cats had less dislike of water than ours, for there is a very well-known and often-mentioned picture in the British Museum which shows a striped tabby cat in a canoe with its master, who is hunting waterfowl with a boomerang or some similar sort of throwing-stick, while the cat is seizing birds on her own account, or acting as a retriever ; in any case she probably would have not minded getting a little wet in the cause of sport. It is quite likely, as Brehm says, that the habit of some tame cats of catching for themselves the fish that nearly all of them are fond of, is really a relic of the habits of the wild animal, which has in our care become as a rule too pampered to provide for itself in this way.

A dislike to getting wet is easily learnt by animals far less luxurious in their tastes than the cat ; even such aquatic creatures as otters and ducks, if brought up away from water, do not care at first about going into it, and seals, after lying high and dry on a rock, seem to dislike the feel of the water on their dry fur. Besides, everyone knows how much the average boy delights in getting his feet wet, a primitive taste, no doubt, for savages, like wild cats,

must not be particular where dinner is concerned—yet there are very few grown-up people who are not particular about keeping their feet dry.

As usual where there are well-marked differences in tame animals, the suggestion has been made that all our tame cats do not come from one stock. The Persian cat has been credited with being the descendant of Pallas's cat of Central Asia, but this beast has a totally different face from any tame cat, with very short ears, and a note quite different from the usual mew; while, except for the long fur, no great difference can be pointed out between Persian and common cats. I see no reason, either, to suppose that the beautifully marked marbled tabbies, which are found both among grey and sandy cats, had a different ancestor from the striped ones. It is quite possible for tame animals to develop different patterns as well as colours, and for these patterns to be repeated in the different hues, as we see in the case of barred and chequered common pigeons.

Taking the usual view, then, that the cat as we have it comes from a purely African animal, it will be seen that man has given it an enormous increase of territory, for it is kept as a tame animal in all civilized countries. From the fact, however, that Herodotus made special mention of the cats and their habits, it is plain that the Greeks had not got them at that time, at any rate in domestication. The house-mouser they did keep—the animal which is

called "cat" by translators of Æsop's *Fables* and other classical texts—was the white-breasted or stone-marten, which is still a common animal on the Continent, and is not difficult to tame for a beast of the weasel tribe. However, it is not likely to have been nearly such a good house animal as the cat, the felines having a much more amenable disposition than the weasels; and it was a worse thief, since honey and eggs are treats to it, besides anything in the way of meat or game.

Even in Roman times, however, there is little record of the tame cat, and it does not seem to have become well known in Europe till towards the close of the empire. The severe fines set on the destruction of tame cats in the old Welsh laws before the Conquest—a ewe and her lamb for a dead cat is a very heavy exchange—show quite plainly that the tame cat was rare and valuable, while the native wild cat, which is now only found in the North of Scotland, was no doubt pretty common throughout the country. This species, it may be remarked, is more fully striped than the African cat, is larger, and owing to its thicker fur has a blunt-looking tail; but some tame cats exactly resemble it in colour, and no doubt, as I have said above, there is some admixture of the blood of the wild European cat in our tame animals, although this wild cat itself is about as untamable a beast as can be imagined. The tame cat itself has a very strong tendency to

take to poaching and run wild—especially, it is said, when of the primitive grey colour—and there would be plenty of wild cats of this new type all over our country if gamekeepers, who find them the worst of vermin, did not keep them down; and in consequence of this readiness to run wild, wild common cats are found in several countries far from the native home of the animals. Such are the wild cats of Australia and New Zealand, many of which, by the way, have descended from tame cats turned out on purpose, in order to act as a check on the rabbits. In this state they seem to grow to a large size; Darwin shot such a cat near Maldonado, in La Plata; and there are wild cats on the small and lonely island of Ascension.

In considering the occurrence of wild cats, however, one must always distinguish between the native felines of a country, where such exist, and the emancipated house-cat, and also between this and animals which are not cats at all in the scientific sense of the word; thus, the “native cats” of Australia are carnivorous marsupials, really very little like cats except in habits, and the “Madagascar cat” is not like a cat at all, being the ring-tailed lemur; the civet-cats, again, although closely related to the cat family, are not true members of it, but belong to the same family as the mongooses or ichneumons.

The wild carnivora are not so popular gener-

ally that many of them are likely to have been introduced ; still, a few have received human assistance in this way, the most remarkable instance being that of the common grey Indian mongoose, which is well known and often quoted. This animal is the most widely spread and best-known carnivorous beast in India, and has gained a great reputation for its skill in destroying snakes. It is about as big as a half-grown cat, but more like a ferret in form, with long, coarse hair of a grizzly grey colour, tinged with rusty about the head and feet, where the hair is short. Some are rusty all over. The mongoose unfortunately does not confine his attentions to snakes, but feeds on any small creature he can catch, including poultry and rabbits ; still, he is incidentally a splendid ratter, and this it is which has led to his introduction into several countries far from his native home.

The first case of this seems to be the introduction of the beast into Jamaica by Mr. Bancroft Espeut, who, like other sugar-planters in the island at that time, was suffering badly from the depredations of a native rat known as the "canepiece rat," which was a great deal worse than the ordinary brown and black rats. It was Mrs. Espeut, who had been in Ceylon and seen what the mongoose could do in the ratting line, who gave the beast its first testimonial, which was confirmed by others ; and after some difficulty with the Government, Mr.

Espeut got permission to introduce some mongooses, and in February, 1872, he let out nine of them, four males and five females, in separate pairs and one trio, at different spots.

In less than six months the rats were noted as being less destructive than ever before ; and in three years, Mr. Espeut had "relief and immunity" from their ravages, and his losses had been trifling ever since.

The good deeds of the mongoose spread to neighbouring properties ; other planters, who laughed at the original introducer's ideas, were not above buying stolen mongooses from the negroes for turning out on their own land, and in this way the mongoose was helped to get a footing all over the island much more quickly than it could have done naturally ; subsequent independent importations were few and of little effect. Mr. Espeut and other planters also sent mongooses to Cuba, Porto Rico, Grenada, Barbados, Santa Cruz, and elsewhere ; in all cases good reports were received of their behaviour, and in his paper read before the Zoological Society in 1882, from which these details were taken, Mr. Espeut states that the Government Botanist of Jamaica, Mr. Morris, estimated the value of the services of the mongoose there "at not less than £100,000 per annum." This was pretty good work for ten years, but another aspect of the question soon asserted itself. Mr. Espeut acknowledged that not only snakes (which in Jamaica were all

harmless), lizards, land-crabs, and toads, suffered from the mongoose's attacks, but also poultry and wild ground-birds, and with the increase of the new beasts these depredations soon became much worse, so that as soon as 1890, a Government Commission was appointed to inquire into the mongoose question; they found that the mongoose not only destroyed birds, but young domestic animals, from kittens and puppies to pigs and calves, and devoured fruit and vegetables as well. Still, nothing was done, and matters ultimately commenced to right themselves in a curious way. Many of the mongoose's victims were insectivorous, and, possibly in consequence of his destruction of such creatures, ticks increased very largely in the island, and caused great trouble. Mr. J. E. Duerden, writing on the subject in the *Journal of the Institute of Jamaica* in 1896, mentioned that the mongoose itself had become far less common, and that some caught were suffering from the attacks of the ticks. Whether or no the beast had thus brought about its own downfall can hardly be taken as settled, but the fact remains that the creatures which the mongoose was supposed to have exterminated have been reappearing, rats have reasserted themselves, ticks have got scarcer, and the period of the mongoose's ascendancy in his new country has passed away, while, as Mr. Duerden says, new balances of life are being struck in the island.

In the eighties the mongoose was transported from Jamaica to a new locality, seventy-five specimens having been got thence by the planters of Hilo in the Sandwich Islands, which was followed by an importation of 215 more for Hamakua. With a start like this, the mongoose, of course, thrived, and did good service in destroying the rats, though, just as had happened in Jamaica, the beast proved destructive to ground-breeding birds, and in 1892 its importation and keeping were forbidden, and, more than that, a price was set on its head; but this was not applied for, since the mongoose was apparently "regarded as a necessary evil in the cane districts."

At about the same period as its introduction into Jamaica the mongoose was brought to Fiji, where apparently it has not become so common as in Jamaica and Hawaii. Attempts to introduce it into Australia and New Zealand have been unsuccessful.

Far otherwise has it been in the latter country with three species of the true weasels, the weasel proper, the stoat, and the ferret, which is simply a tame polecat. The introduction of these creatures, which were turned out to keep down the rabbits, has been a complete success; it began before 1887, by which year about 600 ferrets and 300 stoats and weasels had already been liberated in the Wairarapa district, and during the next dozen

years many more stoats and weasels were set free, with ferrets by the thousand.

All these creatures have now become well established, with, of course, some effect on the rabbits, but unfortunately they have proved destructive to birds as well, as might have been expected, especially as several of the most interesting New Zealand birds are unable to fly. One of these, however, the large flightless land-rail, known as the weka, appears to be "getting its own back," since it has been recorded recently as hanging about the holes of weasels in order to snap up their young; in fact, in spite of jokes about "the weka going to the wall," the bird is pretty nearly as destructive as a weasel itself, and, with the sheep-destroying mountain parrot or kea, is the only native bird which the New Zealand Government allows to be exported—a pretty safe indication of what its reputation is.

The rabbit is the most familiar example of the animal alien and its misdeeds, and it is a curious thing that most of its recorded history consists of man's successful attempts to give the little beast a lift in the world and his subsequent repentance thereof.

Originally the rabbit appears to have been confined to the Spanish peninsula and some of the Mediterranean islands. Although the Latin name of the animal, *cuniculus*, is the origin of the old English coney—still used in law, by

the way—the coneys mentioned in the Bible are quite different animals, the translators not knowing that there are no rabbits in Palestine, and never were any. What they called coneys were a species of what are commonly called dassies at the Cape, and hyraxes in scientific books, little furry animals which, in spite of their appearance, are not rodents at all, but belong to a primitive type of hoofed animals. They have nails, not claws, and look like a big guinea-pig with a rabbit's fur.

To return to the real rabbits ; the historian Polybius, in the second century before our era, is the first to mention them as burrowing, hare-like beasts which took the place of the real hare in Corsica. Strabo, in the next century, mentions them as very common animals in Spain.

In the early days of the Roman Empire, rich Romans had already got rabbits as well as hares in their parks, so that the occurrence of the rabbit in Italy is easily accounted for ; nor, considering the wide extent of the Roman power, is it at all surprising to find the rabbit thriving all over Southern and Central Europe, and even as far north as our comparatively damp and sunless islands. Here it certainly owes its presence to introduction by man ; it was first brought here in Norman times, but it was apparently long confined to England, as it is suspected to have been introduced to Scotland as late as the twelfth century, and

it is known to have spread greatly to the northward during the last hundred years or so. Nowadays it is found commonly even in the Shetlands, a most remarkable locality for an animal of the sunny south, considering that the north of Shetland is level with the south of Greenland.

In 1418, it is stated that rabbits were introduced into Madeira by Gonzales Zarco, who turned out a doe, which had littered on board his ship, along with her family; these rabbits increased enormously and became a serious pest. They also deteriorated in size, became redder in colour, and those Darwin procured alive would not breed with common rabbits; in his interesting account of these little islanders he mentions that they were particularly active. It has of late been pointed out, however, that these peculiarities characterize southern rabbits generally, so that they are not so interesting as was supposed when he wrote.

In opposition to this, however, it has been stated that rabbits were found both on Madeira and the Azores when they were first discovered; but, of course, this is not at all inconsistent with the possibility of introduction—it merely shifts it farther back to more ancient times.

The really sensational introduction of rabbits abroad was, however, a very modern as well as a historically certain one: it was their transportation to Australia in the middle of the last century. They were first turned out near

Melbourne about 1864, and in fourteen years had overrun Victoria; their further career in Australia is well known, as well as the efforts made by the Government to keep them down. Mr. Rodier of New South Wales has thought of what seems to be far the most simple and practical method of keeping rabbits down: he catches all he can alive, kills the does, and lets the bucks go again. This procedure produces a disturbance of the proper balance between the sexes which is bound to be fatal to any animal if kept up long enough, as the constant quarrelling and worrying that go on render it impossible for successful breeding to take place; besides which any young ones that are born are certain to be killed.

Mr. Rodier has kept his own run clear by this means, but the system has not been very widely followed. The fact is, that there appears to be a strong pro-rabbit party in Australia; a very profitable trade in frozen and tinned rabbits has sprung up, and any poor man who can get a companion, a horse and cart, and a few traps, can set up as a rabbit merchant. The rabbit, in fact, is "the poor man's sheep," and as such, has his advocates; besides which the paid rabbit-trappers do not wish to see their employment disappear.

Tasmania and New Zealand also received rabbits soon after Australia, but there is not so much complaint about them in these colonies, and the magnitude of the trade in

them can be judged of by the fact that as long ago as 1898 New Zealand had averaged an export of fifteen million rabbits during the five previous years. Possibly the drier and warmer climate of Australia accounts for the phenomenal increase of the rabbit there, and also the very large area with which the rabbit and its introducers and enemies had to deal; but at any rate want of natural foes was not a cause of its spread over the continent, for, in addition to the carnivorous marsupials known as "native cats," which take the place of our stoats and weasels, the rabbit was exposed to the attacks of crows and eagles, as it is in the wilder parts of Europe, and also had to contend with large snakes and big carnivorous lizards.

Judging from the frequent mention of rabbits in books on American sport and natural history, one might be led to believe that the rabbit had been introduced into the United States; but what are called rabbits in America are not the same species as our rabbit, the term there being applied to the whole of the hare tribe. Most of these are undoubted hares—such species, for instance, as the "snowshoe rabbit" of the north and the "jackass rabbit" of the prairies; but the small kinds known as "cottontails" are apparently much more closely related to our rabbit, although they differ from it in not living in colonies or warrens, and in not making their own burrows, though they will "go to ground" in any con-

venient hole. They agree with our rabbit, however, in being born naked and helpless, and having white flesh, while in typical hares, as everyone knows, the meat is dark, and the "leverets" are born open-eyed and furry, and soon are able to move about.

No doubt the presence of these "cotton-tails" has prevented people from trying experiments with our wild rabbits in America, but the large tame breed of the rabbit known as the Belgian hare has been introduced into some game-preserves there. Although in size and colour this big rabbit is very like a hare, it is a true rabbit in all the essential points I have just mentioned, and has been bred by selection, and not produced by a cross with the true hare.

Rabbits have been long established in the Falkland Islands, and the race found there was once described as a distinct wild species, but is now known to be only a colour variety, and descended from introduced stock. There was also once an introduced race of rabbits in Jamaica, but they have become extinct.

Although a tame breed of rabbits—white with black points—has been called the Himalayan, the rabbit seems not to have been established as a wild animal anywhere in Asia, though tame rabbits are kept in India and as far east as Japan, where a distinct breed has been formed. Angora rabbits are simply a long-haired breed of the tame rabbit.

The rabbit has even been introduced into that lonely no man's land, Kerguelen Island, in the Antarctic Ocean, and its history there is a very interesting one. For some years after its introduction its life was a very precarious one; there were no land carnivores to prey upon it, the only beasts being seals; and there were no hawks or owls either; but there was a big pirate-gull or skua, very similar to the great skua or bonxie of the Shetlands, which very ably filled the place of a hawk, and made things lively for the other sea-fowl and a small duck which inhabited the island. This bird found the rabbits an agreeable change from bird-meat, and persecuted them so much that all one could usually see of the rabbits were clean-picked skeletons or an occasional specimen bolting hastily from one point to another. But in course of time the rabbits managed to increase, and the latest reports of their condition showed that they were well established and threatened the existence of the "Kerguelen cabbage," a plant of considerable value as salad, although it is not a true cabbage. They had probably succeeded by their feathered enemy simply getting tired of continual rabbit, and reverting to his feathered prey to a considerable extent; for man is not the only creature that gets tired of always eating the same meat, especially when it is rabbit.

Although hares are, from our point of view,

better colonists than rabbits, as they do not increase so quickly, are not so destructive, and can be more easily kept under control, as they do not burrow, they have not become so well known as introduced animals as the rabbit has, no doubt because they are less easy to get and to keep alive ; if there is any difficulty about wild rabbits, their tame descendants can always be got, and these in most cases readily take to a wild life again.

The common brown hare of Great Britain, however, has to thank man a good deal for new opportunities ; in the natural state it is not found even all over Europe, the Spanish and Sardinian hares being distinct and smaller species, while it is not found naturally in the high north or high up in the Alps, and how far outside Europe it ranges is not well known at present—certainly not very far.

By human assistance, however, it has been established in such distant countries as Barbados, the Argentine, and especially New Zealand, where the hares grow very large and are regularly coursed on the Canterbury plains ; large quantities of them have been exported to England both for food and for the use of the skins.

Even in our islands the common hare was not naturally found in Ireland, the native Irish hare being a distinct species, but it has now been introduced there, as well as into the Hebrides, Orkneys, and Shetlands, where also

it did not occur naturally. On the Continent it has also been introduced into Southern Sweden.

The hare was also artificially introduced into Corsica and Sicily in ancient times ; as quoted under the rabbit, it is known not to have existed there up to the second century B.C., at any rate, and it is just possible that it was introduced into England by the Romans, the only native hare of Great Britain being in this case the so-called blue hare of the Scottish Highlands, which has shorter ears than the brown hare, is a smaller animal altogether, and is drab in summer and more or less white in winter. This is the common hare of the Alps and of Northern Europe, so well known in its white winter coat in our game-dealers' shops. It was mentioned by Roman writers, and was once, at all events, exhibited in the amphitheatre. It has not been much carried about, but some colonies have been planted in modern times not only outside the Highlands in Scotland and in the Hebrides, but also in several places in Northern England and Wales, and in Londonderry in Ireland.

Norwegian specimens have also been introduced very successfully into the Faroes ; two pairs were turned down about 1855 on Stromö, and after a very few years had increased to thousands, so that some were even exported back to Norway. A very interesting change took place in these animals in their new and milder climate. According to Mr. Barrett-

Hamilton, to whose valuable *History of British Mammals* I am much indebted for many of the details about this group of animals, they "are said, with a very few blue-grey exceptions, to have whitened regularly at first. Gradually, however, the grey individuals became more numerous and the white scarcer, until, in 1860 [? 1890], out of one hundred shot only five or six were white, the others being bluish grey. Thus, in less than forty years the winter coat had changed its character."

Where the brown hare has been introduced into the territory of the blue, hybrids, which also occur where they meet naturally, are comparatively often found; but such cross-bred specimens become rarer after a time, and ultimately the blue hare seems to tend to disappear before the brown, even though they do not seem to fight.

The Irish hare is very closely allied to the blue hare, but is bigger and not so smoky or bluish in colour, and does not turn white commonly in winter, or not so completely as a rule, when it does show this change of coat. Being a good animal for coursing, it has been introduced in various places in all the three divisions of Great Britain, and when living alongside the Scotch hare has so far kept its characteristic peculiarities; in Mull they have, at any rate, done so since their introduction in 1860, a precisely opposite case to that of the Norwegian blue hares in the Faroes.

Squirrels are such charmingly pretty animals and have such interesting ways that the wonder is that they have not been more taken up and patronized by man. As it is, the only case of transference from their own country of squirrels which I know of is the introduction of the common grey squirrel of America into England. The importation seems to have been first made by the Duke of Bedford, who, somewhere about the beginning of the present century, appears to have had several hundreds turned out on his estate at Woburn. Here they have thriven well and multiplied ; and a number from this stock were presented by His Grace to the Zoological Society.

These were installed in 1905 in the now well-known squirrel enclosure, which is surrounded by a fence topped with an inward overlap of metal which defies the climbing powers even of these little acrobats. As there were more of the little animals than were needed, some were released by the simple plan of stretching a rope from a tree inside the enclosure to one outside. After enough squirrels had availed themselves of the invitation to liberty thus offered them, the rope was removed. The liberated squirrels stayed at first in the gardens and bred there, but by degrees some strayed out into Regent's Park, where they found the public still more anxious to supply them with monkey-nuts and other delicacies, owing to the absence of the competition of other aspirants for public favour,

so that it is not surprising to find that they have increased considerably. Indeed, this year it was stated that no less than a hundred had been stolen by a man who made a practice of catching them on the sly, and yet there were plenty left, though lovers of these charming little public pets had been noticing that they seemed not so numerous as they had been.

This rapid increase—for only about two score had been let out in the first place—shows that in Regent's Park the squirrels are as much at home as in Bedfordshire, where they are now so numerous that complaints have been made about their destructiveness. In this respect they are no worse than our native red squirrel, which is not beloved by the forester and gardener, and is just as bad an enemy to small birds as the grey squirrel has been represented to be. "Bloodthirsty little fiend," was an epithet one newspaper writer applied to him, a most foolish one, for anyone can see in the Zoo and the adjacent park how little the birds fear the squirrels; indeed, they have benefited by their presence, since both sparrows and wood-pigeons profit by the food which is given to their four-footed competitors. The remarkable tameness of the pigeons, in coming on to people's hands for food, seems to have originated in imitation of the squirrels, for although looking to the public for food, they were not so tame as all this a few years ago.

It is true that Mr. Pocock, Mammal Curator of

the Zoological Society, mentions in the *Field* for 27 January, 1912, that he once saw in the Zoological Gardens two newly hatched wood-pigeons and most of the nest fall from a tree, and observed that a grey squirrel had done the deed. He has also seen them inspecting birds' nests, and I myself saw a squirrel, sitting on the top of a fence in the park, make a grab at the tail of a wood-pigeon which had settled on the rail below it. On the other hand, I have seen a squirrel in the Zoo swooped at and pecked by a cock blackbird, which, as far as I could find, had no nest near to excuse the assault. And I have seen the wood-pigeons in the park dig up from the leaves and grass the nuts which the squirrels had prudently laid by—literally for a rainy day, for on wet days, when business is slack owing to the deserted state of the park, one may see the squirrels themselves digging up and eating what has escaped the gluttonous maws of the unscrupulous pigeons.

So, on the whole, I think, the birds get their own back from the squirrels in Regent's Park; pigeons, I am sure, bring off as many if not more young and rear them successfully too; black-birds and starlings seem to be increasing, if song-thrushes are perhaps a little less common. But the competition of the blackbirds may be accountable for this, while as to the "wrens, hedge-sparrows, robins, tits, fly-catchers, wag-tails, chaffinches, and a few others which still nest with us," whose disappearance Mr. Pocock

thinks will be hastened by the alien squirrels, these birds never have been commoner than they are now. I have known Regent's Park for the last ten years, before the invasion of the squirrels, and before the sparrows, which Mr. Pocock considers as among the adverse influences with which the other birds have to contend, had been driven so much into the parks by the lack of food in the streets, consequent on the introduction of motor instead of horsed vehicles, and so I can speak with confidence. As a matter of fact, the best view of a bluetit I ever got was at the Zoo the other day. The "few others" are presumably thrushes, blackbirds, and starlings, which were always common, and have on the whole tended to increase (except perhaps the first-named); besides, these birds are commoner than those which Mr. Pocock names, all over the country, irrespective of the presence of squirrels, their diet of worms being so easily obtainable.

In fact, Mr. Pocock's remarks on the subject of grey squirrels and birds are an excellent example of the hasty way in which naturalists, blinded by prejudice, rush to condemn an introduced animal for what it has never done; but when he says its introduction will be prejudicial to our red squirrel, he is quite in the right. The two apparently cannot live together; red squirrels placed in the same enclosure with the greys, came to an untimely end; and a lady I met once when lecturing

told me when I questioned her about the relations of a pair of grey squirrels she kept loose in the country with the native red ones, that they did not kill the red squirrels, "because they could not catch them," which points to the red squirrels being, at any rate, driven away, if not actually killed.

Mr. Pocock points out that the grey squirrel is a tougher-constituted animal, at any rate, in captivity, than the red, besides being naturally more inclined to be tame, and he says that this combination of constitutional and temperamental characters, coupled with greater size and strength, helps the animal to overcome and expel or exterminate the English squirrel when liberated in English woods. This is very regrettable, as the red squirrel is far the prettier animal of the two, though our English specimens are not so handsome as those often imported from Hungary. But the grey squirrel can always be kept down by shooting, and so he could easily be restricted to places in which the red squirrel cannot be induced to stay, though it would be as well to do a little more to give our beautiful little compatriot a chance of making friends with us.

The American grey squirrel was, no doubt, introduced on account of its charming tameness in American parks, where it has long been encouraged, having been noticed; and people fully appreciate it here as filling a distinct gap in our park wild life. An American gentleman

told me once that the park squirrels over there had a distinct notion of standing up for their rights. "If a boy shows them a nut, and doesn't give it them," he said, "they'll bite him," and serve him right. The only person I have ever known of as bitten here by one was a lady who took hold of one which had jumped upon her. I have sometimes wondered as to their intentions when one, as has happened more than once at the Zoo, has jumped on me and thoroughly circumnavigated my person; but I never touched the little beast, and it went off as it came. Why this was done I do not know; I have never given so much as one nut to any squirrel, and I am told they will not jump on to everybody—"not for nuts." I hope it does not mean that I smell nutty!

As the grey squirrel in America, so the striped or palm squirrel in India has profited much and directly by the presence of man. Indeed, Blandford is inclined to regard it merely as a sort of half-tame variety of the jungle striped squirrel, from which it differs but very slightly. At any rate, as he says, it is abundant about cultivation and houses, whereas the jungle race or species is generally confined to the forests. Even in Calcutta these pretty little squirrels—they are smaller than our species—are quite common, and build under the eaves of houses; in my book, *Talks about Birds*, I have told how the malicious crows in the Museum grounds extracted much amusement from one of these

little animals which had its home under the roof of my own quarters. These squirrels will gladly eat any scraps of bread and so forth, and even come indoors to steal; but of course nobody minds their little pilferings—the squirrels are the children among the wild animals, and it does one good to see their happy lives and watch their tricks.

One little game they always used thoroughly to enjoy in Calcutta was the excitement of being hunted by a dog; fox-terriers are the commonest dogs kept by Europeans in India, and every one seems to cherish the hope of catching a squirrel one day. But I never saw it done; what always happened in my experience was that the squirrel, when the dog rushed at him as he pottered about on the ground, delayed his rush for a tree till the very last moment, and got "home" after a most exciting scamper with very few inches to spare, promptly scrambling up the trunk till he was out of reach, and then turning round to gibber derisively, with emphatic jerkings of his bushy tail, at the disappointed canine raging helplessly below.

Mr. E. Kay Robinson, however, when in India, had a terrier which, either by intelligence or accident, found out what I must say I never noticed at the time myself—that the squirrel always runs behind the tree at first, and comes round to reappear at a safe distance above; so this smart dog used to run round the opposite way and snap up the unfortunate joker

before he was out of reach ; a trick she played so successfully that she nearly depopulated the garden of squirrels before the survivors had learnt to adapt themselves to her cunning pursuit.

I have heard also that motor traffic, which only existed in the form of one motor—which I saw blow up—in Calcutta when I left it in 1902, has since proved very fatal to these little animals, which took risks on the roads in the old-fashioned way and did not allow for the speed of the new vehicle, from which even a flying swallow escapes only with an effort.

Though a very dull creature after the squirrels, the little guinea-pig is nevertheless a great favourite among the rodents, and I expect is now to be found in all quarters of the globe where many Europeans reside. I found it constantly on sale in the Tiretta Bazaar in Calcutta, where all sorts of pets were sold. Its native home is South America, and it was domesticated by the natives in Peru before the European invasion. Both they and their conquerors used it as food, and it was eaten after its introduction into Europe ; but no one seems to use it now in England for this purpose, though Mr. Cumberland, in his *Book of the Guinea-Pig*, gives full directions for cooking it, and, having independently tried the experiment, I can testify that fricasseed guinea-pig cannot be told from rabbit. As it does not burrow,

and would be thus far more easily kept under control than the rabbit, it would be a good subject for introduction into places where a small edible beast is wanted ; but I doubt whether it would thrive as a wild animal except in warm climates.

Even such out-of-the-way kinds of beasts as monkeys and marsupials have been helped to colonization by humanity. The green monkey of West Africa, one of the commonest kinds in menageries—in fact, the most freely imported of all African kinds—is said, according to Dr. H. O. Forbes in his handbook on monkeys in Allen's Naturalist's Library, "to be now abundant in a wild state in the island of St. Kitts, in the West Indies, and Colonel Feilden identified it in Barbados." He says it has also been introduced much nearer home, into St. Jago in the Cape Verde Islands. Among the Asiatic monkeys, the bonnet monkey of Ceylon is found in Mauritius, an island much too far off, both from Ceylon and from any other land, for it to have been a natural inhabitant. But its introduction must have been made at a date not long subsequent to the discovery of the island, for La Roque, as quoted by Newton in his *Dictionary of Birds*, says, writing in 1715, that in walking in a garden there he had the pleasure of seeing from behind the hedge more than four thousand monkeys in the neighbouring field. In regard to this last statement, Professor

Newton remarks with studied moderation that "allowance may perhaps be made for some exaggeration." The monkeys, however, with no rivals or enemies, evidently had an easy time of it, and no doubt thrived and increased enormously at first, after the usual fashion of successful animal colonists.

Of the marsupials, a carnivorous opossum, allied to the common kind of North America, if not actually of that species, was introduced into Dominica in 1832, according to Captain Feilden, who says he was told that the first specimens were a pair which escaped from captivity ; here it seems to have distinguished itself by exterminating a species of petrel, which, like several of those oceanic birds in the tropics, nested inland in the mountains, making burrows in the ground.

The common Australian opossum, which belongs to a distinct and much more vegetarian family, called in scientific books phalangers, has been established in New Zealand, owing to the value set on its fur, which has been for years a staple of the trade.

VIII

DOMESTICATED AND INTRODUCED BIRDS; ANIMALS IN THE FUTURE

IT is very evident from what has been said about our action in domesticating and distributing beasts, that we humans have made in this way more than ample amends for what we have destroyed; but in the case of the birds matters are rather the other way about, for the list of domesticated and disseminated species is but small compared with the long roll of the lost, though it may fairly be claimed that the birds we have tamed and spared are generally more interesting than those we have killed out; the dodo, for instance, would be a very poor exchange for the peacock.

Gallant chanticleer himself is certainly one of the most interesting birds in the world, on account of his beauty, courage, and that courtly way of his with the hens which made the mediæval writers speak of him as the knight among birds; and in our care he has travelled from his original Indian home all over the world, being kept even in so cold and remote a country as Iceland. Only in hot countries,

however, have fowls run wild, and generally in islands; tame birds, as Darwin remarks, have less often gone back to the wild state than beasts, because in domestication they tend to lose the power of flight, and thus are less able to look after themselves.

In India proper fowls exist in the truly primitive state; the red jungle-fowl of Northern India has exactly the colour of the black-breasted red tame breeds, the hens being partridge-brown; the comb is always single, and small, and the carriage and size like those of a pheasant. The jungle-cock, compared with the tame cock, is like the wolf compared with the dog; his gait is slinking and his tail droops, and he is much less noisy. When he does crow, his voice is like a bantam's; but he is, in spite of his insignificant appearance, a terrible fighter, and again, like the wolf, will generally beat his tame descendant in a fight. East of India it becomes uncertain how far the fowl is naturally wild; in Java begins the range of another quite distinct wild species, the green jungle-cock, which, like all the other jungle-fowl, has never been truly tamed, and though the red bird is found in the East Indian islands as well as this kind, it is most likely here the offspring of tame birds run wild, for elsewhere two kinds of jungle-fowl are not found in the same country, except in that part of India where the red kind meets the grey jungle-fowl of Southern India, and this is only a border-

district. But, at any rate, we know that the wild fowls found in certain Pacific islands like Tahiti and Hawaii have been taken there by man in a domestic state, such countries being altogether out of the range of jungle-fowl, which are purely Asiatic birds.

Besides, judging from specimens shown in the case of poultry in the South Kensington Museum, these Pacific wild fowls still look more like small light tame fowls than like the real wild bird, and this was the case with all the English-bred so-called jungle-fowl I have seen, including some of a strain which had lived in the woods among pheasants for years. They were apparently quite harmless to these neighbours, but this was not the case with a strain of jungle-fowl bred from birds imported direct from Burmah by a former governor of that country some years back. These birds persecuted the pheasants so that they were being exterminated when I heard of them, as nuisances; yet a pair shown to me, hatched from eggs laid by this pheasant-worrying tribe, still looked more like very smart small game-fowl than like the pheasant-like Indian birds, although almost identical in colour.

Yet a pair of red jungle-fowl received last year by the Zoological Society from the Malay Peninsula are very like the true wild bird, and are excessively wild; but perhaps these merely represent a more complete reversion to type. I cannot help thinking that the original fowl

was purely Indian ; and, of course, it crosses freely, and no doubt has done for ages, with tame poultry kept near forests, so that some variation must be expected, and all birds caught wild need not be of pure wild blood. The habits of wild poultry are so like those of pheasants that nothing special need be said about them, except that they take to trees more freely and show more courage, the hen being in particular a very brave mother, while the cock has been seen to beat a cock kaleege pheasant, although kaleeges can beat common pheasants, and these in their turn are more than a match for tame fowls except the fighting "game" breed.

What a good game-cock can do, by the way, was once exemplified by the exploit of one, which, in the early years of last century, immortalized himself by actually killing a fox. Reynard had come into the farm-yard, where the cock, according to the custom of those cock-fighting days, was boarded out or "at walk," and had seized a hen ; the cock rushed to her assistance, and his furious attack was fatal to the fox, which no doubt was not at all prepared for it. It would be in such case a serious one for a beast of that size, for, as a writer on cock-fighting has observed, the force with which a game-cock strikes with his spurs is terrific, and the finest-tempered steel was needed to stand the strain when used for the artificial spurs employed in the cock-pit.

The jungle-cock, besides being smaller, has not the extreme courage of his cultivated descendant in the gladiatorial trade, but he is a very sharp fighter, and his natural spurs are more formidable than those of any other bird, so that he is no doubt in his own haunts a serious foe, not only to feathered, but to some furred enemies of game-birds, and this may account for the abundance of jungle-fowl in such a vermin-overrun country as India.

Returning to the subject of feral fowls, it must be borne in mind that some birds away from Asia are called wild fowls which are not fowls at all; the "bush-fowl" of West Africa is a large spurred partridge, just as the "bush-cow" is a buffalo and the "bush-goat" an antelope; and the "jungle-fowl" of Australia is one of the megapodes or mound-builders.

Our guinea-fowls are descended from a West African species of that group of game-birds, the "Numidian hen" of the Romans; they still live with us nearly their natural wild life, and have not only been carried nearly all over the world, but have become quite wild again in several places, as on Ascension, where Darwin saw them, on St. Helena and in Jamaica, where, however, the mongoose has nearly if not altogether exterminated them. I believe, also, they have of recent years been turned out in Australia, where they ought to do particularly well. They have been tried in pheasant

coverts in this country, but are too intolerably spiteful to the pheasants to be permitted to live with them.

The peacock—that is to say, the ordinary peacock we know so well, for, as will be seen directly, there are two species—is in its wild state confined to India and Ceylon, where it is very common in districts where the Hindu religion is predominant, being to followers of this creed a sacred bird. In fact, our authorities issue orders that the troops quartered there should not kill pea-fowl, thus repeating the command which Alexander the Great gave when he invaded India, only our regulation is inspired by policy, while his was due to his admiration for the wonderful beauty of the bird, new to him at the time.

It was owing to his conquests, no doubt, that this bird was shortly after brought to Europe, whence it has been dispersed all over the civilized world; but, with the exception of a case quoted by Darwin in his *Animals and Plants under Domestication*, in which it is said to have become “a maroon bird” in Jamaica, I do not know of any instance of its going back to the wild state; which is curious, because it is usually allowed to live a perfectly free and natural life, and, indeed, after all these centuries in alien lands, cannot be distinguished from its jungle ancestor in India, unless it happens to be white or otherwise abnormally coloured.

The other kind of peacock, which ranges from

Burmah to Java, is not nearly so common or well known; yet it must long ago have been taken to Japan, for it was first described from pictures sent by a mediæval Japanese emperor to the Pope. It is still the only peacock depicted in Japanese art, which faithfully shows its peculiarities of scaly-looking plumage and long spearhead-shaped crest. Its plumage has much more green and less blue in it than the common peacock's, the neck being mostly of a green-bronze tint; moreover, it does not scream like the ordinary kind. It is curious, by the way, that the two peacocks also differ in much the same points as the two elephants: in both cases, the rarer kinds, African beast and Javan bird, are larger and especially taller than their Indian relatives; and they show less sex-difference, the female African elephant having tusks as well as the male, while the hen Javan pea-fowl not only has spurs, but also plumage almost as beautiful as her mate's, except for the absence of his eyed train; moreover, both species are fiercer in temper than the Indian kinds. The Indian peacock, however, though, as Darwin says, he looks with his long train more like a dandy than a warrior, is really a fierce bird in his way, and the wild-caught Indian specimens are more savage than our tame-bred ones. This may throw light on a curious phase of the Indian peacock's wild life which is alluded to by Hume in his work on the game-birds and wild-fowl of India.

“Is there,” he asks, “any foundation for the universal belief that exists among natives throughout the length and breadth of the land, that these beasts [leopards and tigers] feed largely on pea-fowl; that when these latter are surprised, especially by leopards, the cocks either fly at and buffet the leopards, or else stand paralysed with fear, in either case falling an easy prey to the cruel cat?”

“The late Colonel Tytler used to relate how one day, when stalking a peacock, he was surprised to find that he had suddenly closely approached it, and that, bestowing no thought on him, it seemed intently gazing on a tiny patch of jungle just in front. Halting for a moment, he discovered a leopard stealthily crawling on its belly towards the peacock. He was much astonished; he had never heard of leopards in the neighbourhood, but his astonishment exceeded all bounds when, on his raising the gun (he had ball in one barrel), and covering the leopard, it suddenly threw up both its paws and shrieked in a voice hoarse with terror, ‘*Nehin, Sahib; Nehin, Sahib; mut chulao!*’ (No, sir; no, sir; don’t fire.) He said that for a moment he thought he must be going mad, floods of reminiscences of enchanted princes, fairy tales, wehr-wolves, and the like, flashed like lightning through his mind. The next, he saw a man very cleverly got up in a leopard skin, with a well-stuffed head, and a bow and arrows in one paw, standing before him.



A MUTUAL SURPRISE.

"The cat tribe are all nervous animals, and the peacock employs his display for the purpose of bluff as well as ostentation."

“From this man he learnt that he was a professional fowler, and that thus disguised he always pursued pea-fowl, as whenever able to get anywhere near them, they always allowed him to approach near enough to shoot them with his bow, or at times even to seize them with his hands.”

I rather doubt whether the peacock always falls a victim when he attacks his terrible foes in such an apparently reckless way; the cat tribe are all nervous animals, and very likely the peacock's charge, no doubt made with his train open and displaying its glittering eyes, may often have the effect that the lady's opened umbrella had on the Bengal tiger which surprised a picnic party a couple of hundred years ago—frighten the beast off, in fact. No such aggressive habit has been recorded of the Javan peacock, but he is so very spiteful that no doubt he tries the same game.

“When the peacock is not there, the turkey spreads his fan,” says the French proverb, and the turkey, as a purely North American bird, had no peacock competition to face for many ages. The natives had tamed him for an unknown period of time before the Spanish invasion, and it is asserted that the birds of prey alone in Montezuma's celebrated menagerie consumed five hundred turkeys daily, to say nothing of those which were given to the beasts. Turkeys were thus the commonest

form of animal food available in Mexico, and it is to the Mexican race of turkey that our tame birds belong, the northern variety, which has not the white tippings on the tail, being chiefly known as a wild bird, though of late years it has been crossed with the tame race of the other variety. Wild turkeys of this northern race are at large in several British parks, and the tame turkey has, of course, been carried to all civilized countries. Some birds, however, are called "wild turkeys" which are not turkeys at all; thus in Australia the "plains turkey" is a kind of a bustard.

The history of the pheasant's relations with man is interesting. Its classical name, phasianus—the Phasian—shows its place of origin, the country watered by the River Phasis; that is to say, Mingrelia in Western Asia. The river, by the way, is now called the Rion. From here the Greeks got the pheasant, and passed it on to the Romans, and they in their turn seemed to have turned it loose over pretty nearly all the part of Europe they controlled, including our own country: for there is no reason to suppose that the pheasant ever was a genuine European bird.

This was the "dark-necked" pheasant of our game preserves, and its blood remained pure till little over a century ago, when the fine ring-necked race from China was introduced into England, and now the two have got thoroughly mixed up, so that the British

pheasants are a set of absolute mongrels. Other allied races, Mongolian, Japanese, and Prince of Wales', have of more recent years been added to the jumble, for all these races which have a close general resemblance to the original bird will breed with it freely; all of them, by the way, come from some part of Asia, and generally from a temperate climate, though the ring-neck ranges as far south as Canton.

This last bird has also been introduced into St. Helena, New Zealand, and parts of North America; these two countries have also received the common mongrel pheasant, and pheasants are reported as common in Vancouver.

In addition to these shooting-pheasants, the Chinese gold and silver species among the "fancy" kinds have also been widely spread, but mostly as aviary birds, in which capacity they are well known in North America as well as in Europe, and probably all over the civilized world. They are very distinct both from each other and from the ordinary kinds, do not readily cross with them, and have horrible tempers and a strong objection to "showing sport"; hence there has been comparatively little inducement to offer them the freedom of the wilds, though this has been done in the United States, in Oregon, at any rate. To enumerate the other species of non-sporting pheasants which have been to a limited extent

taken abroad would hardly be of general interest, but it is worth while to mention some other game-birds which have been disseminated by man. The familiar red-legged partridge or "Frenchman" is not a true British bird, having been imported from the Continent, in which it is naturally confined to the western extremity. It used to have a very bad name with gamekeepers, who often went so far as to creep up to a sitting hen and destroy her and her eggs with one fell swoop—or rather smash—of a stick, the unfortunate Frenchmen being regarded as vermin on account of their running habits and their supposed hatred of the English grey bird; but driving makes the Frenchman give a sporting shot, and he is now known not to be the truculent individual he used to be reckoned.

This partridge has also been introduced into St. Helena, and our common European grey bird is being vigorously pushed in the United States. They in their turn have given the pretty and plucky little Californian valley quail, so conspicuous with its jaunty crest, to New Zealand and the Sandwich Islands.

Grouse have not been much introduced away from their homes, as they are generally very delicate in captivity, especially our red grouse, which used to be the only bird not found outside the British Isles; but it has now lost this dignity by having been successfully established on the heaths of North Germany and Belgium.

The biggest of all grouse, the capercaillie, or capercali, has also succeeded when introduced from Scandinavia into Scotland, but this was a reintroduction, as the bird had formerly lived there, but had become extinct about a century before its reinstatement in the middle of the nineteenth. The case is particularly interesting and encouraging, and may well be borne in mind in view of the wails which are always being raised about merely local extinction, which, as Mr. Aflalo well says, is obviously not so regrettable as the complete disappearance from the earth of a species. "While there is life there is hope," is as true of animal species as of human individuals, and if half the fuss that has been made about local remnants of species common enough elsewhere had been made about really hard-pressed species, we might have had several of those, now altogether extinct, living to-day. With regard to the capercaillie, it sometimes displays such an extraordinary fierceness that this deserves passing record, in view of the existence of "rogues" among the large beasts and of the curious propensity of the wild peacock I have above alluded to.

Lloyd, in his *Game-Birds and Wild-Fowl of Sweden and Norway*, says of this trait in the capercaillie: "There are times, even when in a state of nature, that it loses its habitual timidity, and becomes what in Sweden is called *Folkillsken*, or viciously inclined towards

people, actually attacking those who come in its way. Of this fact more than one instance is on record.

“ ‘During a number of years,’ says M. Adelberg, ‘an old capercali cock frequented the estate of Willinge, on the island of Wermdö, who, as often as he heard people in the woods, had the temerity to alight on the ground, and with continual flapping of the wings to peck at the legs and feet of those who disturbed his domain.’ ”

M. Brehm mentions a somewhat similar incident. “ A male capercali had its resorts in a wood a (German) mile from Renthendorf, in the vicinity of a tolerably well-frequented road. This bird as soon as it perceived anyone approaching, would fly towards him, furiously attacking him with both beak and wings, and could with difficulty be driven away. A Jägare succeeded in capturing it, and carried it to a place two (German) miles distant, but on the following day it had returned to its old haunts. Another person afterwards caught it with the intention of taking it to the ‘Ober-Jägermeister.’ At first the bird became quiet, but soon began to tear and peck at him so effectually, that he was compelled to restore it to liberty. After the lapse of some months, however, it totally disappeared, having probably fallen into the hands of a less timid bird-catcher.”

Once more : “ In the month of August,” we

are informed by M. Roman, "a youth of about twelve years of age, from Willingsberg, captured an old capercali cock with his hands. It occurred in the following manner: the boy, who was catching crayfish in a stream, observed the bird promenading amongst some heather on a little eminence close by, and he immediately conceived the idea that he would endeavour to make it his prize. For this purpose he crept stealthily up the side of the knoll, but on reaching the top, what was his surprise to see *Pelle* (a Scandinavian nickname for the bird, just like our 'chanticleer' for the cock), with head and tail erect, and feathers ruffled, as if in great anger, coming 'full tilt' against him. . . . He nevertheless mustered courage, and tranquilly awaited the onset of the foe. The contest was severe, but in the end the youth came off victorious, the capercali for its temerity paying the penalty of its life."

It seems rather hard, this, on the gallant grouse, which in this case certainly did not begin hostilities. Lloyd's note on these cases he gives is interesting: "May not the 'people-hating' capercali spoken of above," he says, "be such as have escaped from confinement? Or may they not have been seized with a species of madness, as would at times seem to be the case with other birds? In *Scandinavian Adventures*, for instance, I have related that on one occasion a goshawk furiously attacked the horses harnessed to a gentleman's carriage ;

and only recently we read in the English papers of a poor girl being assailed and most cruelly maltreated about the face by a rook ! ”

Among the waterfowl, man has tamed and distributed several species of the duck family. Our ordinary tame ducks come from the common wild duck, whose home is the north temperate zone, but its domestic descendants may now be found in the hottest climates ; I have seen them waddling actively about on the mud flats of Zanzibar under an equatorial sun, and running away from the sea instead of into it when approached, so they were leading entirely a land life in a most unnatural climate. But the common duck loses the power of flight more readily than any other bird, and it does not seem to have gone wild anywhere, though the real wild bird has been introduced into New Zealand, where it will probably get thoroughly mixed up with a very near relative, the native grey duck.

The red-faced Muscovy duck, the drake of which is so remarkable for his great size and swaggering habits, comes from Tropical America, and was already tamed when the country was discovered ; it is a very distinct species from the common duck, and as a tame bird, is generally to be found in hot climates, such as Tropical Africa as well as its own continent ; in India, however, as in Europe, it is mostly kept simply as a curiosity. This duck, even when tame, is far better able to look after

itself and its young than the common duck, and has full power of flight, and the habit of perching so common in tropical ducks; yet it never seems to have gone wild, though very likely in localities where its wild ancestor is found some inter-breeding takes place.

Two kinds of geese have been tamed and transported, as well as two ducks—the common grey goose, which is a bird of Northern Europe and Asia, and the black-billed brown Chinese goose, which in the tame state generally has a knob on the bill; this is the only tame goose, not only in China, but over most of India, and, as it is also called the African or Guinea goose, is probably kept in Africa as well. These two geese, although quite distinct, and found as separate wild species, are much more closely related than the two ducks, and interbreed quite freely, as may be seen in our parks. The hybrids will breed again, and the case is interesting, because it is the only one known in which two undoubted wild species, near enough to be mixed up in this way, have been tamed: thus the theory of the mixture of species in some of our tame beasts, mentioned in the account of these, becomes more credible than it would be otherwise.

The celebrated fighting geese of Russia are said by Pallas, that fine old naturalist who wrote a Latin work on Russian natural history more than a hundred years ago, to be a mixture of these two species. A goose fight, according to

him, must be a quaint sight, for each contending gander has his "second" in the shape of his favourite goose, who does not take part in the fight, but leans over her husband and encourages him by shouts.

This feminine encouragement may be seen, by the way, in the case of the pretty little painted Mandarin duck of China, which is now living a perfectly wild life on at least two English estates, the Duke of Bedford's and Mr. Meade-Waldo's in Kent; while its relative, the American wood-duck, called Carolina duck by fanciers, has been bred in Europe for the last hundred years.

To return to our geese: although they have been carried far and wide, I know no instance of the Chinese kind running wild, although it retains the power of flight like the common goose, but this last bird has gone back to the wild state in La Plata and New Zealand.

In the last country the handsome black-necked Canadian goose, the common wild goose of North America, is also established, so I hear, and it is well known to be in a wild state in several parts of our own country, where it is so familiar in parks.

The wild specimens of the common white or mute swan to be found in several parts of Britain are also foreigners, though they do not come from an ancestor living so far off, for the mute swan is a bird of Eastern Europe and Western Asia, and breeds quite

wild as near us as Sweden. Yet it seems certain that it was introduced here. Tradition says Richard Cœur-de-Lion brought the first pair from Cyprus, and in our law it ranks as a bird royal. It is now kept all over the civilized world, as is also, in much smaller numbers, its swarthy rival, the Australian black swan. This bird has colonized New Zealand, both by human assistance and on its own account, and is now quite common there.

Canon Tristram, in his *Natural History of the Bible*, speaks of the common pigeon as "certainly the earliest domesticated bird of which we have any record—at least, from the earliest times of which we have historical knowledge, it was retained by man in the same semi-domestic state in which it is still held in this country, as in the East." And he cites the text from Isaiah: "Who are these that fly as a cloud, and as the doves to their windows?" where, he says, "the illustration is taken from the dovecot towers, with latticed openings ('windows') for the ingress of the pigeons, which still may be seen flying, literally 'like a cloud,' in the neighbourhood of all Eastern towns and villages." But such domestication need only mean the special encouragement of a wild bird, and does not imply the capturing and taming of specimens, so that the goose, which is figured in a very ancient Egyptian picture, probably has the priority. Everyone is familiar with pigeons living about towns in an ownerless

condition in England, and the typical colour of the blue-rock—the blue-grey with black-barred wings—is common although not by any means universal among such birds. The wild blue rock-pigeon, varying slightly according to locality, is found all across Europe and Asia ; in Europe it is a bird of the sea-cliffs, but the Indian race is found inland and even breeding in the walls of wells and in inhabited as well as ruined buildings.

Its descendants have been taken all over the civilized world, and have probably gone wild in all countries where high buildings or cliffs reproduce natural conditions—for this bird generally dislikes perching on trees, whether it be wild or tame. But there seems to be little actual record of this, though Darwin mentions the pigeon as having become wild on the banks of the Hudson in North America, and Buller as having taken to the woods in New Zealand. If the flock he speaks of had really taken to a tree life, it is a strange change of habit, but I have somewhere come across a reference to cliffs in New Zealand tenanted by escaped tame pigeons, and perhaps it was wooded cliffs that Buller's flock had taken to. Mr. Hudson, however, speaks of pigeons he kept in La Plata as nesting on the flat boughs of a big ombu tree when the dovecote was overcrowded, although living so far a natural life that they found their own food, so that possibly the bird, conservative as it is, may in some cases

give up its preference for stone over live timber.

The only other pigeon that has been domesticated is the pretty cream-coloured collared turtle-dove, which appears to be descended from a wild species found in North-East Africa, but the date of its domestication is quite unknown ; as a favourite cage-bird it has been taken almost everywhere, but I do not know of its having gone wild anywhere except in Devonshire. It has few opportunities of going wild, as it is seldom let out, and when loose has but little idea of taking care of itself, though, in spite of centuries of cage life, its flight is still extraordinarily swift—more so than that of our wild turtle-dove.

The wild spotted-necked turtle-dove of China has been established in Hawaii, and the allied spotted dove of India in Australia, while during the last year or so an attempt has been made to introduce our wood-pigeon into the United States, Americans being fascinated, apparently, by its tameness in our parks. I have taken every opportunity of protesting against this, the wood-pigeon, as every farmer here knows, being a most destructive bird, so that if it ever gets fully established in the great western forest region of North America, it may well prove to be a far worse nuisance than the poor passenger pigeon ever was. Americans, however, tell me that they want a bird out there “that everyone can shoot” ; but the wood-

pigeon has a remarkably good idea of taking care of itself, and is not shot with any extraordinary degree of ease, tame as it is when it perceives that man is inclined to be friendly to it.

The bird I have always recommended to them is the lapwing, which in the prairie region should become common enough to satisfy anybody, and would be not only harmless, but highly useful to agriculture. This pretty plover has, indeed, been established in New Zealand, and it is, so far as I know, the only bird of the wader group which has been carried away by man from its native haunts and established elsewhere. Lapwings of other kinds are found in different parts of the Old World, generally in hot climates, but our lapwing, the true peewit, is a bird of the northern regions only, although it visits southern countries in winter.

Parrots are such destructive birds that it is not surprising that there are but few records of their establishment away from home ; but the pretty blue-and-yellow Australian parrakeet, called by bird-fanciers the mealy rosella, has been established in Hawaii by the introduction of a single pair ; and the true rosella of Australia, a much commoner and more gorgeous bird, with red and green as well as the other two colours showing in its plumage, has been acclimatized in the North Island of New Zealand, although it is destructive to fruit. The little grey-headed love-bird of Madagascar

has been introduced into the Seychelles, and another little parrot often called a love-bird, the Australian grass-parrakeet or budgerigar, has been so thoroughly domesticated, that it is freely bred in Europe and no doubt in many countries, although not established anywhere as a wild bird.

Birds of prey are too much disliked to have been given many chances of spreading ; but one, the little owl of Continental Europe and Northern Asia, the classical owl of Minerva, has been introduced successfully into several parts of England, where it has thriven so well that in some places it is the commonest of all the owls. It is a most comical little bird, and a good vermin-destroyer like most owls, but unfortunately it is destructive to other wild birds. I have heard of it even attacking a stock-dove, and will at times carry off young pheasants and chickens ; so that it is not looked on with very great favour. However, it does not seem to be objected to on the Continent, and as some of our small birds are a good deal too numerous to please farmers and gardeners, it is likely on the whole to re-establish its character. During the last few years it has been taken to New Zealand, for although there was a native owl rather like it there already, and this bird used to be a great enemy to the British small birds when first they were introduced, this "more-pork," as it is called, seems to have become scarce, so that it is evidently felt that some

foreign bird-enemy—not a hawk, however—was wanted.

Our brown owl and barn owl seem also to have become settled in New Zealand, though only one pair of the brown was introduced, and these were supposed to have very soon been killed.

Coming to the smaller birds and their allies of the passerine order, we find there has been a good deal of introduction abroad, and only the few important species can be noticed.

The sparrow among birds, like the rabbit among beasts, is a stock example of the undesirable alien. Messrs. Dawson and Bowles, in the *Birds of Washington*, published in 1909, thus relieve their pent-up feelings on the subject of this fearful wild-fowl :—

“ What a piece of mischief is the sparrow !
how depraved in instinct ! in presence how
unwelcome ! in habit how unclean ! in voice
how repulsive ! in combat how moblike and
despicable ! in courtship how wanton and
contemptible ! in increase how limitless and
menacing ! The pest of the farmer ! the plague
of the city ! the bane of the bird world ! the
despair of the philanthropist ! the thrifty and
insolent beneficiary of misguided sentiment !
the lawless and defiant object of impotent
hostility too late aroused ! Out upon thee, thou
shapeless, senseless, heartless, misbegotten
tyrant ! thou tedious and infinite alien ! thou

myriad cuckoo, who dost by thy consuming presence bereave us daily of a million dearer children ! Out upon thee, and woe the day !

“ Without question the most deplorable event in the history of American ornithology was the introduction of the English sparrow. The extinction of the great auk, the passing of the wild pigeon and the turkey—sad as these are, they are trifles compared to the wholesale reduction of our smaller birds, which is due to the invasion of this wretched foreigner. To be sure, he was invited to come, but the offence is all the more rank because it was partly human. His introduction was effected in part by people who ought to have known better, and would, doubtless, if the science of ornithology had reached its present status as long ago as the early 'fifties. The maintenance and prodigious increase of the pest is still due in a measure to the imbecile sentimentality of people who build bird houses and throw out crumbs for 'the dear little birdies,' and then care nothing whether honest birds or scalawags get them.”

It is pretty evident that, whatever naturalists think of him, the American public have a decided fondness for the “street-Arab among birds,” and, in view of the ferocious tirade above quoted, it is interesting to note that last year a paragraph went the rounds of the Press celebrating the prowess of the sparrow in destroying the alfalfa weevil, an insect which was threaten-

ing the very existence of that important crop. Possibly in America they will yet have to recognize "Philip Sparrow" as a benefactor, and at any rate he did rid them of the caterpillars he was introduced to destroy.

Moreover, he has proved himself a useful destroyer of weed seeds ; while in New Zealand, where, as well as in Australia, he has been introduced and multiplied as freely and got nearly as much abused as in America, he is defended as a colonist by Messrs. Hutton and Drummond, in their book on the *Animals of New Zealand*. They do not admit that the introduction of the sparrow is one of the mistakes of acclimatization, but consider that without this bird, or some other equally common, the country would be overrun with insects as it was before the introduction of the sparrow, and life would be insupportable. While admitting the destructiveness of the bird, they say that those who condemn the sparrow should name a substitute for him.

The Java sparrow, not a very near relative of the house-sparrow, though a bird of the finch kind, has been established far and wide in tropical climates, not only in the islands adjacent to his native Java, but in Malacca, South China, India, and even in far-off places like Zanzibar and St. Helena, while it has now a strong foothold on the East African coast. The case is an interesting one, as tending to vindicate humanity against the charge of indifference to

beauty, for pretty as the Java is with his exquisite lavender-grey plumage, velvet cap, and rosy bill, no one pretends he is of any use, while he is an admitted depredator on the rice crops. However, he is so much valued as a cage-bird, and so abundantly reported to Europe, that a good deal of money must be made out of him by some people. Besides, in Zanzibar I found him being used for food.

It is rather a curious coincidence that the only other European finch besides the house-sparrow which has been naturalized widely abroad is the goldfinch, the very opposite in appearance and behaviour of "Philip Sparrow," who, his best friends must admit, is a bit of a rough, while the goldfinch is quite a little aristocrat in his way. The home of the goldfinch is Europe and Western Asia, with Northern Africa, and he is especially common in the Mediterranean basin. Hence it is, no doubt, that since his introduction into Australia, Tasmania, and New Zealand, he has thriven so well there that he is far more common than in Britain; like the rabbit, he has found the conditions like those of the best part of his native range. A friend of mine, a keen bird-fancier, told me some years back that he had seen more goldfinches near Melbourne in one day than he ever saw over here in his life; yet the bird's introduction to Australasia dates back only about half a century. New Zealand goldfinches strike bird-fanciers, who observe this favourite

bird very critically, as particularly fine specimens, so there also they are well suited.

In North America our goldfinch has also been established for a good many years, but would seem not to have become an abundant and characteristic bird as in Australasia. Also, in considering the position of the imported goldfinch in the United States, one must remember that there is a native goldfinch there as well, though this is one of the siskin group of finches, not a goldfinch properly so called. As the male of this bird is mostly yellow, it is also called wild canary, but the true canary, though so common a cage-bird everywhere, and often escaping, has not become established in the wild state away from its native islands, the Canaries and Azores.

The goldfinch has also been established in Jamaica, but one does not hear much of it there. In fact, it is little heard of as an introduced bird at all, because it has not mis-conducted itself like the sparrow, but proved, as one would expect, a harmless as well as ornamental bird, if not positively useful in destroying the seeds of weeds. It has also been reported on favourably as a destroyer of scale-insects on fruit trees, so that it can fairly be regarded as an example of an introduced creature which, in contradiction to the ordinary ideas of naturalists on this subject, has not "changed its habits and become a pest."

The crow group are not very popular with

man as a rule, but the rook is rather an exception, and rooks have been established in New Zealand for a good many years, though they were very long in spreading much. I believe they have also been established in South Africa, although there is a native rook there, which, unlike our bird, does not become bald at the root of the beak. The "Jack-rook" of the Falkland Islands is not a rook at all, nor any other sort of crow, but a kind of carrion-hawk, which is not only, however, mostly black in colour, but also caws like a rook, and, judging from the couple they have at the Zoo, even has the crow habit of hiding its superfluous food, a trick which its relative the carancho or caracara hawk of the mainland also shares.

To return to the true crows—that incarnation of impudence, the Indian house-crow, had been introduced into Zanzibar shortly before my visit to the island in 1892, and looked like thriving; but I have never heard what has happened to this colony since—the excuse for inflicting them on Africa was their supposed utility as scavengers.

The starlings are much more likely to make respectable colonists than the crows, and two of them, our starling, which ranges all across the northern part of the Old World, and the brown, yellow-legged Indian house-mynah, which takes the place of the starling to a great extent in the East, have been carried far and wide by man.

The starling is well established in Australia, Tasmania, and New Zealand, and has quite recently been introduced into New York, where it is now said to have obtained a firm footing, although only about a couple of dozen birds were turned out to start with. In New Zealand and Tasmania the starling has won great approval as a pest-destroyer, and in the former colony it has even been stated that it was impossible to grow barley before the starling was introduced; but in Australia the bird is not very well thought of, for though admitted to be a good insect-eater, it also destroys a great deal of fruit, though apparently some of the native birds, such as bower-birds and crow-shrikes, are every bit as bad. This excessive fruit-eating has been cited as a change of habit, but the starling at the southern extremity of its natural range in the west—in North Africa—is well known to the Arabs as a pest in their date-groves; no doubt in hot, dry climates this omnivorous bird, like ourselves, feels that he can do with a little more fruit and less animal food.

But one real change of habit, seen in the starling in New Zealand, is worth mentioning: there he has taken to drinking honey from the flowers of the New Zealand flax, in apparent imitation of a native honey-eating bird, the tui or parson-bird, which, although of very different habits and of larger size, rather reminds one of the starling in its dark, shot-silk

plumage and "variety-entertainment" style of song.

The house-mynah, being a tropical bird, has been chiefly introduced into hot countries, though in New Zealand he has been established, but is local; he is well known in Australia, in Hawaii and Tahiti, in Mauritius, and, very near his own home, in the Andaman Islands. In Mauritius, where its introduction dates back at least a century, the mynah, there called martin, is considered a useful insectivorous bird; in Australia it is said to be destructive to fruit, and in Hawaii to destroy the eggs and young of the native birds, though there is some difference of opinion as to this. In the Andamans, it certainly seems to have expelled the beautiful native starling, which is coloured white, grey, and black, like a miniature sea-gull, from Ross Island, for when I was there in the nineties, I saw no white mynahs or starlings on Ross; but then Ross is a very small island—I have more than once walked right round it before breakfast. On Viper, only a little way off, I found the white bird quite common, and running about on the ground like our starling or the house-mynah, near houses; this was a change of habit, for on an island of the Andamans, some distance away, covered with virgin forest and uninhabited except by the pigmy black natives, the white mynahs were only to be seen on the tops of the trees, where only, no doubt, they could find food; for

all the insects I saw on the leaf-strewn forest floor were large bright scarlet bugs, creatures which were not likely to be eaten by any ordinary bird, since insects which exhibit such colours as these—the so-called warning colours—are generally disliked. Here, then, we see a forest bird capable of changing its habit and adapting itself to the new conditions produced by ourselves when we clear off the trees and entirely alter the face of the land.

Owing to their beautiful song, our thrush and blackbird have been taken to Australia and New Zealand; in the former they are not common, but in New Zealand, where conditions are much like those at home but far more favourable owing to the milder climate, they have become very abundant, and behave in accordance with their characters at home—they both destroy fruit, but the blackbird is far worse than the thrush, and its introduction is considered to have been a mistake.

The skylark is another popular songster which has been widely distributed; it is now very common in New Zealand, where it is injurious to young corn as it is here, and so not much appreciated nowadays; from New Zealand it has been taken to Hawaii, and has thriven well there. It has also been established on Long Island in New York, but has not spread abroad in the States.

Of the pretty crested tree-birds known in India as bulbuls, the red-eared bulbul, a hand-

some brown-and-white bird, with long black crest, red on the cheeks and under the tail, about the size of a lark, has been imported into Mauritius quite recently and has increased enormously ; unfortunately bulbuls live a great deal more on fruit than on insects, and the bird does more harm than good. This bulbul has also been introduced nearer its home, in the Nicobars.

Of other small " soft-billed " birds, so harmless as a rule, most are not easy subjects for unskilled people to keep in captivity, and so we find that the only one which has been naturalized abroad is our hedge-sparrow, which, though no sparrow, lives well on seed, and is easily kept. This has been taken to New Zealand and has thriven there, and is looked on with favour as a useful bird.

Attempts have been made, both in England and on the Continent, to establish the pretty little Himalayan and Chinese bird called the Pekin robin, a near relative of the hedge-sparrow, but I do not know of any case where the bird has become established, unless perhaps in the Duke of Bedford's park at Woburn ; they seem to do well for a time, but ultimately to disappear, although omnivorous and very artful and well able to look after themselves. In New Zealand and Hawaii they would probably thrive, and would certainly be good insect destroyers, as they eat all sorts of insects and are very clever at catching them.

The domestication of the ostrich is certainly far the biggest thing man has ever done in recent times in the subjugation of the wild—in fact, it is the only such achievement. The ostrich, inhabiting as it does North as well as South Africa (though there is some difference between the local races), as well as Arabia and parts of Western Asia, was well known to the ancients, and figured in the Roman arena as a matter of course, as well as supplying its plumage for decoration. But until about a generation ago, in spite of the esteem in which its feathers were held, and of the fact that a few of the birds were often tamed and kept along with cattle, it was not truly domesticated. It was in South Africa that the first experiments were made, in 1857, but no great increase in the industry took place till 1880. Then it grew by leaps and bounds, and in 1904 there were 357,000 birds on the farms. There are also ostrich farms in East Africa.

The ostrich, having been proved a profitable creature, has not only been cultivated in its own continent, but abroad, and is now kept in Australia, New Zealand, and South America, while there is at least one farm in California. Some years back there was one in India, at Delhi, but not much was heard of it, and I do not know if it is still in existence.

The so-called ostrich of South America, properly called the rhea or nandu, although its feathers are far inferior to those of the

true ostrich, still supplies a marketable article, and on some Argentine estates the birds are regularly driven in and plucked. This bird has also been taken abroad for practical purposes, as it is stated to be rather widely kept in the South of France, not only for its feathers, but for its flesh, which is said to be something between mutton and turkey in character.

A beginning has been made in the transportation of another bird much persecuted for its plumes—the great bird of paradise of the Aru Islands. About half a hundred living specimens of this gorgeous cousin of the crow were transported by Mr. W. Frost, commissioned thereto by Sir William Ingram, to that gentleman's private island of Little Tobago, near Trinidad. Here, if properly looked after, they ought to thrive; and as this bird has apparently no power of flying far—merely travelling short distances from tree to tree—it ought to be very suitable for cultivation in the many tropical islands which have at present very few birds, and those of little interest or use to man.

It remains to say a few words about animals in the future. The question naturally suggests itself—Are there any important animals yet to be discovered? and it may be replied that there are perhaps a few, but that with the increasing range of exploration that probability becomes smaller every year. Still, there are rumours of beasts existing in little-known

parts of the world which may yet reward investigators. There is the water-elephant of the Congo region, for instance. The first person to hear of this, to my knowledge, was Mr. J. D. Hamlyn, the animal-dealer, who had news of a strange, big aquatic beast, dreaded by the natives, on one of his expeditions to West Africa in search of live chimpanzees and gorillas. Subsequent reports have fully confirmed the information Mr. Hamlyn gave me, and the beast has been actually seen.

It is described as smaller than the true elephant, with shorter trunk and smaller ears; very fond of the water, and decidedly fierce. It will probably turn out to be a large kind of tapir. The discovery of a tapir in West Africa would be no more remarkable than that of the mouse-deer presently to be mentioned as found there; for there is a tapir in the Malayan region, where also two species of mouse-deer are found. At the same time, it may well be something very much more sensational—some beast of a type supposed to be extinct—in view of the so-recent discovery of that interesting beast the okapi, also in West Africa.

The haunt of the okapi is in that portion of the great African forest-mass which fringes the part of the upper course of the Nile known as the Semliki River, in the Belgian Congo territory. Here Stanley got an inkling of its existence from the forest pigmy negroes. He says, in the appendix (B, p. 442, vol. II) of

his book, *In Darkest Africa*, published in 1890 : "The Wambatti knew a donkey and called it 'atti.' They say that they sometimes catch them in pits. What they can find to eat is a wonder. They eat leaves." The last remark was evidently added as an afterthought, the information having no doubt been got from the pigmies. Any large animal which does not eat leaves has a poor chance in a high virgin forest, and even then such forest is a starvation place for most animals other than climbers, for there is little to get on the ground over large tracts, all low vegetation being stifled by the shutting out of air and light by the crowns of the great trees and the litter of the ground by fallen logs.

However, there was there some indication of the existence of a good-sized hoofed animal, and later on Stanley, in conversation with Sir Harry Johnston, spoke of the unknown creature as a probable new beast, mentioning at the same time a huge pig about a couple of yards long, which he had seen. This, by the way, has also been brought to book, and called Meinertzhagen's Forest-Hog; but though the creature is interesting as forming a link between the typical wild boar and the wart-hog, there is nothing particularly striking about its appearance, although it is the biggest of pigs.

It was not till the end of 1899 that Sir Harry Johnston himself was able to get information

at first-hand from the pigmies ; and what they told him so far confirmed what they had said to Stanley, in that they compared it to a mule—but they also said it had stripes like a zebra's. He found that the Belgian officers of Fort M'Beni in the Congo Free State not only knew of the beast, but had seen it, though not alive ; dead ones had been brought in by their native soldiers, which had been speared in the forest, and the hides and meat had been brought in for use ; so here were people actually dining off a strange beast unknown to science ! Sir Harry even got hold of some actual strips from a recently obtained skin, which had been cut for bandoliers ; but as these came only from the striped parts of the animal, which, as readers can see from Mr. Swan's beautiful drawing, are certainly marked very like some new sort of zebra, it is only natural that he did not think of any other kind of animal. Thus he came actually to see the tracks of the okapi in the forest, and to put them down as a forest eland's, since they were evidently made by a cloven-footed animal, and the creature itself was never in view. He found also that the beast was about the size of a mule, did live on leaves, and went in pairs in the thickest parts of the forest ; thus went the native account, which further research has not upset.

The strips of skin he had got were quite reasonably described by Dr. P. L. Sclater, then

secretary of the Zoological Society, as indicating a new zebra, which was named in honour of Sir Harry Johnston. This was in February, 1901, but the circumstance had been communicated to the Zoological Society, and the strips of skin shown, at the end of the year previous.

During this same year, M. Karl Eriksson, a Swedish officer in Belgian employ, managed to get hold of a skin and two skulls of the okapi, and sent them to Sir Harry Johnston at Uganda. He, of course, at once saw that the beast was no zebra, and in his communication to the *Times* and the Zoological Society on the subject, suggested that it was an ally of the giraffe, approaching the *Helladotherium*, a beast which has been found in a fossil state in Greece. Such an occurrence of a living form of an extinct race would not have been beyond parallel, because the little water chevrotain, or mouse-deer, of West Africa is a living species of the extinct animal from the same Greek locality, known as *Dorcatherium*.

However, Sir Ray Lankester, when these specimens got to South Kensington, came to the conclusion that, though one of the giraffe family, it was not a *Helladotherium*, but needed a name of its own; so he called it *Okapia*, and *Okapia johnstoni* it will now always remain, only its family name needing alteration, the Christian name, so to speak, commemorating Sir Harry Johnston's share in its discovery, remaining un-

altered according to the rules of zoological nomenclature.

It is satisfactory to note that in the very year after the beast had thus had its status properly settled, the Belgian Government decreed that nobody should hunt it unless under a special official charge to do so. Since this time, although about a couple of dozen specimens of the okapi have been obtained, nothing very important has been ascertained about the beast, except with regard to the difference between the sexes. It is now known, from further specimens, that the male has horns, of a very peculiar type. They are, as our illustration shows, quite short and covered with a hairy skin as in the giraffe. But whereas the giraffe's horns are finished off with a tuft of hair, those of the okapi have not even any skin at this part, but end in a cap of bare bone. Future research may show that this is shed like the bony horns of deer, some small species of which have the merest tiny spikes for antlers, sometimes mounted on hairy-skinned supports. The okapi and his mate are said to be much attached to each other; accounts say that he watches over her while she grazes, and takes the post of danger in the rear when they are in retreat from a foe. This is interesting, because, though few beasts are so chivalrous as this, it is exactly like the behaviour of some birds; anyone who frequents our parks can see how the common wild drake stands sentinel over

his duck when out worm-hunting in the grass on a wet day, and how he waits for her to rise before he springs from the water.

Europeans have in a few cases now seen the okapi alive, and a very few specimens have even been caught. A photo of a baby one which lived for a month after capture may be seen in the *Annals of the Congo Museum* for 1907, illustrating M. Julian Fraipont's paper, to which I have been indebted in writing this account. The little creature looks much like a calf, and the old animal appears so far to resemble a cow in that it lows like one. It is also credited with being a harmless beast, in which it resembles its high and mighty relative the giraffe, so that it may ultimately turn out to be a possible subject for domestication; some big domestic animal suited to African conditions is very badly needed, especially in West Africa, where some tribes even on the coast not only have no cattle, but are without even the hardy goat.

Three specimens of the okapi are now exhibited in the Natural History Museum at South Kensington, and, of course, other such institutions have been supplied, so there is no reason to kill any more, but a great deal to try to get live specimens; but the okapi will never be a striking menagerie animal, being not at all imposing in comparison with the giraffe, and for looks not to be compared with the zebras, among whose relatives it was at first placed.

The only other very remarkable beast discovered during the past generation is the marsupial mole of Australia, and this little yellow beast of the Australian desert is of more scientific than general interest. It had long been a matter of comment that although we had marsupials of almost every pattern and habit—hopping vegetarian kangaroos, climbing opossums, more or less carnivorous or vegetarian, according to whether they lived in America or Australia, truly carnivorous dasyures, one, in Tasmania, even being called, with considerable reason, a “wolf,” and even parachuting forms among the Australian opossums simulating flying squirrels—we had not got a mole-like marsupial yet. It is perhaps the marsupials of the Australian region that are going to furnish us with the next zoological sensation, for there is a rumour of the existence in New Guinea of a large beast “with a face like the devil”—or like the Papuan native’s idea of his Satanic majesty. One would expect this to be a large carnivorous marsupial, for the country is far out of the range of any of the true non-marsupial carnivora, and it seems strange if a large island like New Guinea, with its pigs, kangaroos, cassowaries, and large, clumsy crowned pigeons, has not some good-sized carnivore to prey upon them. One would expect such a beast to be very like the devil—the Tasmanian devil, at any rate.

On the whole, however, it seems that we must

make up our minds not to expect much in the way of zoological novelties, but to make the most of what creatures we have got. A certain amount of natural extinction must be expected, of course. The case of the tile-fish, although fortunately the rumour of its complete extinction proved to be a false alarm, nevertheless shows how a species might disappear owing to natural causes, and not to any fault of man's. It is a handsomely coloured fish, but with no very marked peculiarity of form except a curious conical crest on the head; its size was large, as it might weigh as much as forty pounds, and its flesh was good for food. It was first discovered, according to Mr. F. A. Lucas, to whose paper on "Animals Recently Extinct," in the *Report of the United States National Museum* for 1899, I am indebted for the fish's history, by Captain Kirby, when cod-trawling south of Nantucket in May, 1879. He took no less than five thousand pounds weight of the new fish, most of which were thrown away, but a few were cooked and found good, so subsequent takes were smoked. The throwing away of thousands of pounds of fish sounds a wanton waste, but an unknown fish is apt to be a dangerous article of food, especially if brilliantly coloured, for there are a good many poisonous-fleshed fish in the tropics, where brilliantly coloured fish are common.

Later in the same year Captain Dempsey took plenty of the same fish on hand-lines,

but as he was also after cod, and did not get any, he also preferred to stick to the fish he knew, and left the new kind alone. The next year the United States Fish Commission steamer made acquaintance with the new food-fish, but owing to want of proper facilities little could be done in the way of research at the time, and in 1882 reports were brought in by ships arriving at New York, Philadelphia, and Boston that they had been sailing through many miles of dead fish, most of which were of this new kind. Sometimes this area of fish-destruction was so wide that the narrators had sailed among floating fish-corpses for no less than sixty miles—in one case a ship reported dying fish everywhere in sight for 150. It was estimated that the zone of death was from five to seven thousand square miles in extent, and that more than a billion fish had perished. No disease or parasites were found afflicting the specimens examined, and some disturbance of natural conditions, such as the explosion of submarine volcanoes, or some cause tending to a great change of temperature, had something to do with this enormous mortality. On the whole it was considered that a sudden lowering of temperature in the warm belt of water inhabited by the tile-fish had been accountable for their death; this would be comparable to the great destruction wrought by sudden snowstorms among land animals which has been observed in regions

where snow is generally unknown, and to the well-known havoc caused by blizzards. Fish, being "cold-blooded," are, of course, peculiarly sensitive to such lowering of temperature; it is well known to amateurs of the common goldfish that specimens bred in warm-water tanks, where they increase amazingly, are very delicate, and in consequence "cold-water-bred" goldfish are commonly advertised.

Whatever the cause of the destruction, however, it is satisfactory to record that it was not complete, though from 1882 onwards till the time Mr. Lucas wrote no tile-fish had been taken; but it is stated in the volume dealing with fishes in the *Cambridge Natural History*, published in 1904, that "the fish has reappeared in tolerable abundance within the last few years," so that about a decade, apparently, had elapsed before it could reassert itself.

It is this reassertion of a species which has been brought low from one cause or another that man ought to aid and encourage. Generally he has done exactly the reverse, and the blame of this is to be laid at the doors of naturalists, who are always whining about the horrible depredations of people who for a living kill animals which possess marketable products, and about the dreadful blood-lust of sportsmen who kill creatures for amusement. Nevertheless, it is generally the naturalist who is eager to wipe out the last remnant of a species before it is "lost to science." No reasonable trader or sportsman

wants to spoil his own game by exterminating a species ; he merely takes what he can get on the natural if reprehensible principle of " if I don't, somebody else will." The naturalist, on the other hand, has, even if he is not conscious of it, a direct interest in the extermination of a species ; for Tennyson never said a truer word than when he wrote, " The man of science himself is fonder of glory, and vain," and the lucky individual who writes up the final account of a species can bask for ever in the rays of that glory, and has no fear of his records being upset by subsequent inconvenient discoveries as in the case of a living form. Moreover, most expert naturalists are officials, and the official mind is notoriously dull, and averse to troubling itself. It is so much easier to say that the extermination of a species is inevitable than to think out some means of preserving it, and it must always be remembered that the professed naturalist is generally particularly interested in anatomy, geographical distribution, evolutionary problems, or anything but the enjoyment of the contemplation and study of the living animal, as the " man in the street " is himself, and naturally presumes his professional brother to be.

Fortunately, public opinion is now pretty well awakened to the necessity of preserving such remains of the persecuted animals of the world as we have left to us, and protective



MILLOU, OR PÈRE DAVID'S DEER.

laws are in force, and reserves exist, or are being arranged for, in all quarters of the globe, where such creatures can be protected. The remnant of the American bison is now safely imparked, and has as good a chance of surviving as the European bison, which has been successfully preserved for centuries in Lithuania and the Caucasus. Later on, when naturalists have got over the prejudice against shifting the habitat of animals which obsesses them at present, they will realize that the records of naturalization, which I have endeavoured to summarize in a previous part of the work, show that a species can often be successfully transported to a new locality, even if only a few specimens are available for stocking; and I am convinced that in such judicious distribution of desirable animals will be found a means of salvation for many hard-pressed forms. The fact that many undesirable creatures have been distributed abroad is no argument against the dissemination of better animals over the world.

An example of a species preserved from extinction, first by enclosure in a park and afterwards by transport abroad, is to be found in the curious Père David's deer from China. This curious beast, so unique with its strange antlers provided with an enormous back-tine, and its donkey-like tail, has never been found wild anywhere, but known from the first as an inmate of the Imperial Hunting Park at Peking, where, no doubt, it was originally deposited as a rarity.

Stock from this park have reached Europe, and a herd are thriving in the Duke of Bedford's park, at Woburn; and they are now the only representatives of the species, the Pekin herd having perished in the Boxer troubles. One must agree with the suggestion that has been made by Dr. W. T. Hornaday, Director of the New York Zoological Park: it would be desirable to start a herd of this deer in some country remote from England, "as an insurance measure against the possibility of calamity at Woburn." The same might be said about other threatened species; in fact, years ago I made the suggestion *re* the beautiful American wood or Carolina duck, which is on the down-grade as a wild bird, though Americans generally do not seem to be aware that it is thoroughly domesticated in Europe; an American breeder is also raising it in large numbers, and took many away from Europe as fresh stock, only a year ago.

In the accounts given of extinct species, it will be easily seen that localization—either permanent or at the breeding season—has always been the fatal peculiarity of a species which has become extinct, while conversely the dissemination of the species which we have tamed and transported has given them a fresh lease of life in every case.

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