

THE MAMMALS OF
GREAT BRITAIN
AND IRELAND

BY J. G. MILLAIS

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Killers attacking an Atlantic Right Whale

The Mammals

of

Great Britain and Ireland

BY

J. G. MILLAIS, F.Z.S.

Author of 'The Wildfowler in Scotland' 'The Natural History of the British Surface-feeding Ducks' &c.

WITH 23 PHOTOGRAVURES BY THE AUTHOR, H. GRONVÖLD, AND E. S. HODGSON,
12 COLOURED PLATES BY THE AUTHOR, A. THORBURN, AND H. W. B. DAVIS, AND 53 UNCOLOURED PLATES
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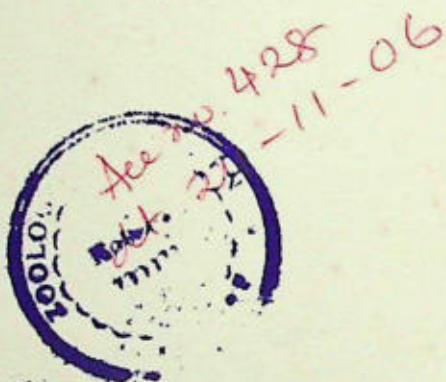
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The Mammals

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THE MAMMALS OF GREAT BRITAIN AND IRELAND

Order RODENTIA (*continued*)

Group or Sub-order *DUPLICIDENTATA*

IN this group of the Rodents two pairs of upper incisor teeth are present in adults, the additional and smaller teeth being behind and not at the side of the usual pair. The group embraces the *Leporidae* or Hares and the *Lagomyidae* or Pikas; only the first family are now represented in Britain. At birth three pairs of upper incisors are present, but the outer tooth on each side is lost early. The enamel extends all round the incisors, but is thicker on the front surface than on the back. The molars, which have transverse enamel folds, are rootless. The fibula is anchylosed to the tibia and articulated with the os calcis. The intestines are long and there is a large cæcum.

Family *LEPORIDÆ*

HARES AND RABBITS

In the *Leporidae* we have mammals of medium size, with long ears and short and usually upcurved tails; the hind limbs are considerably longer than the fore limbs; there are no eyelids. The clavicles are imperfect. The skull is compressed, the frontals broad; the post-orbital processes are narrow where they join the frontals, and then expanding form the upper rims of the orbit.

Dentition.—I. $\frac{4}{2}$; P.M. $\frac{3}{2}, \frac{3}{2}$; M. $\frac{3}{3}, \frac{3}{3}$.—Toes, 5 and 4.

The Mammals of Great Britain and Ireland

The Hares and Rabbits have a worldwide distribution, but they are not indigenous to Australia and New Zealand; Rabbits have, however, been introduced, and have established themselves so well that they are now a plague.

The *Lagomyidæ* or Pikas, the second family of the *Duplicidentata*, are not now found in Britain, but the Siberian Pika, *Lagomys alpinus*, inhabited the south of England in the Pleistocene period.

Genus *Lepus*

The members of this the only genus are terrestrial in habit, frequenting, as a rule, open arable land or desolate plateaux. The Rabbit and Hispid Hare burrow, and the Mountain Hare places its young in cavities in the ground. The majority of the species are found in temperate climates, but some occur in the hot plains and deserts of India and America.

The Hares and Rabbits are now often placed in two different genera—*Lepus* and *Oryctolagus*—on account of slight differences in the structure of the skull and cæcum and in habits, but as intermediate forms exist we prefer at present to retain the single genus. Perhaps the most important distinction is the condition of the young at birth, for whereas in the Hares the young are born fully clothed in hair and capable of running at once, and with their eyes open, the young of the Rabbit are blind, naked, and helpless.



THE COMMON HARE.
Lepus europæus.

Litho. W. Greve, Berlin.

THE COMMON HARE

Lepus europæus, Pallas.

Lepus europæus, Pallas, 'Nov. Spec. Glirium,' p. 30 (1778).

Lepus timidus, Bell, 'Brit. Quad.' 2nd ed. p. 331 (1874).

Local Names.—*Brown Hare, Hare*,¹ *Puss* (English); *Bettie, Mawkins, Bawd* (Scottish); *Miolbaidhe, Gearr, Giorr, Maigheach* (Gaelic); *Gearr-fhiadh, Moigheach* (Irish); *Mwaagh* (Manx, Kermode); *Scovarnoeg* (Old Cornish, Harting); *Ysgyfarnog, Ceinach, Prÿ Cath eithin* (Welsh).

Characters.—Cheeks reddish yellow, forehead and nose greyish brown; the upper parts appear 'grizzled' owing to the mouse-grey under parts of the hair showing in places where they are not covered by the yellowish-red extremities of the long hairs; throat, chest and limbs yellowish red, belly white; the tail, which is black above and white below, is $3\frac{1}{2}$ inches long; vibrissæ yellowish white. The ears are about $4\frac{1}{2}$ inches long, they are buff and taper towards the tips, which are black, the naked inner sides are very blue in colour. Length of head and body from 21 to 23 inches. Leverets are more russet than adults.

Like most of the rodents the fur is in a continuous state of change throughout the year. 'Apart from this continual change,' says Mr. Drane, 'there is a much more marked seasonal one, which occurs between July and September. When this periodic moult is fully on, nearly all the fur on the back is easily removed by a comb or by plucking it out by the hand. For the last three years in August I have so removed the fur from my Hare's back, and found the surface black where in nature the fur is brown. Now, the strange thing is that when the brown fur first grows from the skin it is black; when it is an eighth of an inch long the tips of the individual hairs turn brown, and when fully developed the brown of the Hare's back is produced by the aggregate tips of black hair turned brown, while the basal portion of all the fur on the back is always white. The very short hair on the nose comes black, rapidly turns brown, and never has a white base.'

¹ Derived from Anglo-Saxon *Hara* or *Her*.

The eye of the Hare is not beautiful, but it is large and prominent. It is a hard, cold, and uninteresting eye, well described by Zola as 'A bleak and frigid stare which does not seem to see,' or with 'an ever-haunting absent look as of one whom her sufferings overwhelmed.' 'Its iris,' says Mr. Drane, 'does not contract as in the cat's eye and hawk's eye, giving great variety of expression, but it glows like those of the Felidæ.' And yet the same observer says that the eye is capable of expressing a great variety of feeling, joy, suspicion, fear, and affection. He even goes so far as to say that the animal actually smiles. During sleep, however, the pupil does contract, a circumstance contrary to the ordinary law of nature. Mr. Drane found that when he focussed a strong light on one eye the pupil of that eye contracted.

The claws, especially those of the hind feet, are long, compressed, and sharp.

An English Hare usually weighs from 7 to 9 pounds, but those from South Scotland are sometimes considerably larger. The largest Hares I have seen are those from Orkney and the Earn and the Tay Valleys, where weights of 10 pounds are common. During one shooting season (1886) at Murthly in Perthshire, I weighed three Hares which scaled respectively 11, 11 $\frac{3}{4}$, and 12 pounds. Bell (p. 337) refers to the weight of a female Hare which weighed no less than 13 lb. 1 $\frac{1}{2}$ oz. Lincolnshire Hares of 11 pounds have several times been reported. One, noticed in the 'Field,'¹ was said to have weighed 13 $\frac{1}{4}$ pounds. It was shot at Longwithen, near Morpeth, by Mr. Robert Henderson.

The large incisor teeth in the Hare are very strong and covered with a thick enamel on the outer surface, but the covering on the inner sides is thinner. To keep these teeth from growing too fast the Hare has a habit of frequently grinding its teeth together when in repose. Sometimes the edges of these teeth do not exactly meet, and we see curious abnormalities with huge tusks. This unfortunate malformation is, however, much commoner among rabbits. Mr. Woodruffe-Peacock says that Hares require coarse sand to grind down their ever-growing teeth. This also acts as a mechanical digestive and laxative.

Distribution.—The Common Hare is found over the whole of Europe, with the exception of North Russia and Scandinavia,² as far east as the Caucasus. It occurs everywhere in England and in Scotland where there is cultivation; but it is not a native of Ireland. In many places in the north it owes its presence to recent introduction, and is only rare where the character of the country is unsuitable to its habits. It does not seem, however, to be well known that

¹ October 28, 1876.

² The *Lepus timidus* of Linnæus was the Mountain Hare.

Common Hares are often found high up on the mountains, where they are fond of resting and passing the day. I have seen a Brown Hare shot at an elevation of 2500 feet during a White Hare drive, and have frequently seen and shot them on the hills above Pitlochry (about 1500 feet).

In the islands off the west coast of Scotland the Brown Hare is found in Skye, Mull, Tiree, Calve, Jura, Islay, South Harris, and Lewis and Barray.¹ In the three last-named islands they were found in 1879, but are now probably extinct, as I could not hear of any during a residence there in 1899 and 1900.

Into the above-mentioned islands the Brown Hare was introduced as well as to the Orkneys and the Shetlands. In Orkney it is still very plentiful, and runs to a large size in the Mainland, where it is said to have been introduced by Malcolm Laing in 1818. Hares also exist on Hoy, Eday, Rousay, Shapinsay and South Ronaldshay. Until recently they existed on Papa Westray (Harvie-Brown and Buckley), but are now considered to be extinct. Orkney Hares are the only British examples which seem to vary regularly in colour. I have seen individuals on Pomona which were much darker than any Scotch or English ones.

Hares were introduced in Shetland early in the last century by Mr. Laing, and there are still a few on the Mainland, where they are found from Dunrossness to Mossbank.

Brown Hares have been introduced into Ireland on at least twelve occasions, and in ten of these instances Captain Barrett-Hamilton considers² they have been more or less successful, notably at Powerscourt, Cleenish Island, Strabane, Castle Hyde, Fermanagh, Baronscourt, Castle Martyn, and Lurgan. Given a fair chance to establish itself in Ireland, the Brown Hare could undoubtedly do well, and I do not agree with Dr. Scharff's view that the Brown Hare and the Mountain Hare will not live together.

Doubtless Brown Hares will not flourish if they are forced to live in the hills or in unsuitable places with the Irish Hares, but there are many fertile valleys and grasslands in Ireland where the Brown Hares could thrive *if they had the chance to exist*. In most cases Brown Hares have been turned down in private demesnes where they have done well; but immediately they show their noses outside the reserve, death sure and swift comes upon them. I remember seeing

¹ Alston states that Hares were first introduced into Lewis shortly before 1797 (*Old Stat. Acc.* xix. 272); into Coll, 1787, Mull, 1814 or 1815, and Orkney in 1832. *Fauna of Scotland, Mammalia*, p. 30.

² 'Notes on the introduction of the Brown Hare into Ireland.' *Irish Naturalist*, 1898, pp. 69-76.

nine Brown Hares in Lord Powerscourt's park; they were huddling together for mutual protection, and looked about as happy as a similar number of staunch Conservatives would do at a meeting of Irish Nationalists.

Captain Barrett-Hamilton concludes his paper by remarking: 'The refusal of the English Hares to associate with the Irish species, as reported in more than one instance, is of interest, and tends to support Dr. Scharff's views that the two species are antagonistic, and that the Brown Hare, being the stronger of the two, has driven the other out of the European plain into the mountains. This supposition is further supported by the behaviour of the two species in Scotland where their respective ranges meet.'

With this view I do not agree at all, for the two species are in no sense antagonistic to each other, and given the occurrence of hard winters and late springs when the two species meet and overlap they would certainly interbreed to a small extent, as the Blue and the Brown Hares of Scotland have done. The two species do not occupy the same ground as a rule, simply because their habits and food are different. The Brown Hare, however, is not an aggressive animal¹ and does not drive away the Mountain Hare when it finds it residing on low moors close to agriculture, but takes its presence on this its favourite 'resting' ground as a matter of indifference. I have killed an equal number of Brown and Blue Hares in a day's shooting at Murthly, and have often seen them rise from their forms close to each other. In time the Blue Hare, which is practically the same animal as the Irish Hare, leaves these low altitudes, but it is not for reasons of hostility on the part of its stronger relation. I believe that if Brown Hares were properly established in Ireland they would take to resting by day up on the moors among the Irish Hares, and that these sporadic instances of introduction, when the animals have had no chance to establish themselves, in no sense prove anything with regard to the actual relations of the two species.

Habits.—The favourite habitat of the Common Hare is low open cultivated lands, wide rough fields, or low rolling hills from whence a good view can be obtained. Such resorts are necessary, for the Hare has no burrow to which it can retreat and must rely on its senses of sight and hearing for protection from its many enemies.

In small copses, fern brakes, whins, or rough pastures it sits in its 'form' during the day, stretching itself and coming out to feed in the evening. In the

¹ The Brown Hare is often driven away by the rabbit, but no one has ever seen a Brown Hare chasing away or being itself chased by a Mountain Hare.

courting season, however, Hares are abroad at all hours. They exhibit some choice in the selection of their 'forms,' varying them according to climatic conditions. In hot and wet weather they select open coverts, in windy weather long grass or whins, and on fine frosty winter days sunny slopes or wall-sides are much affected. Some observers think that Hares close their eyes in sleep and others that they do not. Hares are so vigilant and have so keen a sense of hearing that their eyes are always wide open when you see them crouching in their beds. Mr. Drane, however, sets this question at rest by observing¹: 'One of my first errors was a belief that the Hare sleeps with its eyes open, for by no artifice or arrangement could I catch my Hare with closed eyes. That was because we had not grown sufficiently intimate to lay aside our "society manners"; but now my Hare will sleep, and sleeping dream, with closed eyes, not only in the room where I am but on my lap—nay even in bed with me, for where I am the Hare likes to be, if there is no intruder.' Curiously enough this tame Hare would dream 'that it is pursued by some dog or other swift-footed enemy, tearing about as if mad, and practising with marvellous skill and celerity the art of "doubling" in a space no larger than my bed.'

Hares do not eat such a great variety of foods as rabbits, in fact they are somewhat selective in their diet. They eat quantities of meadow grass (*Poa pratensis*) and the hard *Festuca rubra*, and are very partial to marl clover (*Trifolium medium*). Sow thistles and dandelions as well as chicory (*Cichorium intybus*) are also eaten to a great extent, and when the natural plants become scarce they will travel great distances to rob kitchen-gardens and allotments of parsley, lettuce, thyme, and carrots. If they can get into a flower garden the pinks, wallflowers, dahlias, carnations and nasturtiums are the first to suffer. Among wild shrubs they have a partiality for the shoots of wild rose and white-thorn, they will also bark the wood of the last named in severe winters. On the whole they are not destructive to trees, but in spells of cold weather they are almost as bad as rabbits, gnawing indiscriminately at any bark that can be peeled. Young birch shoots are also a favourite food. In the summer and autumn Hares do considerable damage to young corn and to such vegetables as turnips, swedes, and mangolds. Farmers can always tell whether Hares or rabbits have been attacking turnips. Hares will peel off the outer skin and leave it on the ground, but rabbits will eat skin and all. They are also very partial to the green blades and stalks of growing wheat, but neglect the ears, which other rodents love.

¹ 'The Hare in Captivity.' *Trans. Cardiff Nat. Soc.* vol. xxvii. Part II. 1894-5.

All along the gravel and sand beaches of the east coast of Scotland I have noticed abundant tracks of Hares made during the night, and have often wondered what inducement caused these animals to resort to such situations. The fact, however, is explained by an interesting note by the late C. J. Cornish¹:

'A curious fact in Hare life is their exceeding fondness for sea-beaches, especially those on which certain sea-plants grow. The favourite plant of all is a somewhat rare one, the sea-pea (*Lathyrus maritima*), which grows on the shingles, and especially on pebble banks like that at Orford (which is nine miles long), and on the Chesil beach, and on others in Sussex and Devon. This pea sends down its root many feet into the shingles, and spreads like a mat of dark-green salty leaves over yards of stones. On Chesil beach the Hares come down from the hills to eat this plant, and below Orford they actually swim the broad tidal river to get it. Thence they travel down the beach and so reach the mainland near Aldborough. The only other vegetation is a thin dry grass in places, and sea-campion. Yet forty Hares may be shot in a day, and often are, on this bed of stones, in excellent condition.'

Mr. Drane of Cardiff, who has kept Hares in captivity for sixteen years, has shed a flood of new light on the natural history of the Hare, and some of his discoveries with regard to its feeding habits and the processes of digestion are remarkable and show how much there is still to be learnt about our commonest mammals. On this point he says:² 'This delicately clean, odourless, and elegant creature has one very unpleasing habit: it eats its own dung even when supplied with abundance of acceptable and favourite food. This fact, for fact it positively is, again and again verified by incredulous and therefore close observation, opens up the question whether or not the Hare chews the cud. "And the Hare, because he cheweth the cud but divideth not the hoof, he is unclean to you" (Levit. xi. 6). In accordance with my method I had made up my mind on this point before I consulted men or books; so as to have a check upon hasty conclusions I asked a friend to whom field sports are one of the primary conditions of manly enjoyment—"Does the Hare chew the cud?" His answer came with that nearly contemptuous assurance which I have learned to distrust as one of the infallible signs of untrustworthy opinion. He said, "Yes, I have seen it dozens of times!" My own belief is that not only does the Hare never chew the cud, but that it cannot. The Hare has a habit when at rest, as when sitting in its form, of grinding its teeth, probably to keep them in order. May not this be the origin of the

¹ *Shooting* ('Country Life Library of Sport'), ii. 155.

² *Trans. Cardiff Naturalists' Soc.* vol. xxvii. Part II. 1894-5.



J. G. Millar sculp.

W. G. Woodbury del.

A Hare springing from its form.

assumption that it is chewing the cud? What seems really to occur is this: The creature is essentially nocturnal, feeding mainly between 7 p.m. and 7 a.m., chiefly from 9 to 12. It then fills its stomach pack-full, and keeps it full while partial digestion proceeds rapidly; the half-digested food passes down a long, narrow canal, and enters a kind of second stomach; when both are replete it ceases eating, retires some distance from its feeding ground, and spends the major part of the day in perfect quiescence, digesting perfectly this store of food. The process is automatic, and as perfectly beyond the creature's control as it is in ourselves. During this period certain portions of food in the form of imperfectly exhausted, soft, mucilaginous pellets are extruded from time to time and received by the animal directly into its mouth upon their exclusion from the rectum; they are swallowed without anything deserving to be called mastication—a movement or two of the jaws—and passed a second time through its digestive canal. This continues to go on until, I imagine, the whole of the food has thus passed through, and I think it is not till then that the pellets of the ordinary dung assume their ultimate form, size, and consistence—that is, hard and almost perfectly desiccated. During all this period the creature does not excrete any ordinary dung. The excretory functions are actively resumed in the evening, and continued through the night. I made a cold aqueous solution of some of these soft pellets, and divided the clear, filtered product into two parts. To one of these I added the iodine test for starch, but it gave no reaction. To the other I added some solution of starch, and kept the mixture at 98° Fahrenheit for two hours. On applying the same iodine test there was no reaction, showing that they retained sufficient of the digestive ferment to destroy the added starch. This I take to prove that these soft pellets are not the ultimate product of the digestive process. A similar experiment made with ordinary hard pellets gave no reaction for starch. This seems to show that the second passage of the food through the digestive system is part of nature's law, and necessary for her purposes. I must here tell you that Professor Haycraft does not think the experiments conclusive, nor my deduction correct. That may be so, but if it is I should like a reason given me for the undoubted second passage of the food through the hare's digestive system. I find a little difficulty in the way of explanation, accordant with my own view, in the fact that it is not these soft pellets only which the creature consumes, for it undoubtedly eats also, to a limited extent, the perfectly digested and desiccated pellets of its ordinary dung. Here I must leave the question as to whether or not the Hare chews the cud,

for I have not the capacity to determine it. It may depend upon the definition given to "chewing the cud," which I take to mean a return of the food from the first stomach to the mouth for remastication, which return does not take place in the Hare. The result may be the same, though the process be different—a kind of inverted method.'

We know that the Hispid Hare (*Lepus hispidus*) has not given up the burrowing habits of the family, and the Common Hare still has some *instinct* for burrowing, for it will half-burrow out a trench with its feet preparatory to lying down. Moreover, a wounded or much frightened Hare will often go to ground in a rabbit-burrow or old drain when pursued by man or dog. Nine-inch drain-pipes are often placed in the Essex Marshes so that when Hares are pursued by lurchers they can take refuge.

On this point Mr. Drane, speaking of a tame Hare which he kept, says in the previously mentioned paper:

'It likes to be with me, and delights to jump upon the bed, over and under, and upon it again and again, and I have become so fond of it and accustomed to it that it does not disturb me at all. It will almost every morning, when its period of nocturnal activity ceases, get under the bedclothes to enjoy the warmth, and then it will wake me by burrowing furiously; it tears away at imaginary excavations, and throws out imaginary earth precisely as a rabbit does in its real work, "washing its hands with invisible soap in imperceptible water." In these imaginary burrowings it meets with imaginary roots or other obstructions, which it bites through. That in prosaic English means just so many holes in the sheet, but the creature is so loveable that I would much rather have half a Hare than a whole sheet. This burrowing seems to me an instinctive harking back to that remote period in this creature's evolution when it lived in holes, as its congeners do.' A similar evolution is now taking place in the case of the rabbit in Australia, which is dispensing with burrows and making a nest in open grass. Perhaps in time these young Australian colonists will be born well-furred and able to see and run at once. Again, on the other hand, it may be said that Hares have not given up burrowing because they never did burrow, whilst rabbits may have acquired the habit.

Another interesting point noticed by Mr. Drane is that the Hare has a habit of panting under conditions of enjoyment, and not as a result of fear or extreme exertion. A dog pants to cool itself, but a Hare pants apparently to warm itself, for its natural temperature, which is about 98°, rises in a few minutes to 106°.

Hares are bold swimmers and take readily to the water. I have seen Hares cross the Tay on several occasions, and once watched one try to cross at Eels Brig stream, perhaps the swiftest part on the whole river. It showed some discretion in entering the water at the head of the rapids, but being borne down swiftly it lost heart and returned to the south bank about two hundred yards lower down. It then cantered up to the head of the stream again and made another unsuccessful effort, after which it went slowly up into the woods of Taymouth and disappeared. I think Hares can swim considerable distances even across arms of the sea. There are instances of Hares swimming from an island off the Cornish coast to the mainland, a row of twenty minutes by boat, and recently a Hare had a nest on an island in Connemara Lake and swam over several times every morning and evening to the land, which was at a considerable distance. The Rev. E. Adrian Woodruffe-Peacock speaks of the freedom with which Hares will take to the water. He says¹: 'The (poaching) "fraternity" know only too well that they thread hedges, cross highways, swim wide rivers, and easily jump smaller streams up to twenty-five feet in width. Nearly thirty years ago these facts were brought forcibly home to me by a field of carrots on the west side of the river Trent. On that side of the river there were no Hares, but the east side was strictly preserved, and they were in plenty. The carrots acted as a perfect lure, during an open winter, to attract the Hares across the stream, where the river was a trifle over two hundred yards wide. They came over in the failing light, and returned about dawn. . . . In tidal rivers like the Trent Hares show great discretion, after a little practice, in "taking off" according to the tide above or below the landing spot, as the case may be.' A Hare released by me in a lake swam two hundred yards with apparent ease. Its motions in the water are similar to those of the rabbit, nose and stern held high and shoulders deep. It propels itself principally by the hind legs, the hocks of which rise high above the water.

A rabbit runs down hill with ease, though it may prefer a flat surface, but a Hare always runs up an incline if possible.² If forced down hill a Hare will sometimes topple head over heels and seem quite out of its element. When pursued on a hill face it prefers to run diagonally across it, and in such a position can twist and turn with skill. The position of the eyes is such that the Hare does not see well straight in front, consequently it often runs into things it would

¹ *The Cultivation of the Common Hare* ('Rural Studies' Series), p. 13.

² Besides making larger tracks, the Hare always puts one hind foot in front of the other as it advances, whereas the rabbit places the two nearly in the same transverse line.

wish to avoid. When leaving its 'form' the Hare often does so with one big leap as wide as fifteen feet.¹

The usual pace when undisturbed is an easy loping canter; in such movements the head and ears are held as high as possible, and the tail 'drags' or hangs loosely behind the animal. When alarmed the head is sunk into the shoulders and the ears laid back while the tail is bent forwards over the rump and the full white under parts exposed. The position of the tail in this case is often disastrous to the animal, since it makes it at once conspicuous to man or dog.

During the courting season in February and March, Hares are seen about at all hours of the day. It is a common sight to see one or more bucks slowly pursuing in tireless circles the coy female, or sitting and staring stupidly at one another. 'Mad as a March Hare' is an old proverb that owes its origin to the aimless meanderings of these lovesick creatures, and if we watch them in their amorous play we realise that the simile is not inept. Like rabbits, Hares never truly pair, although pairs may constantly be seen together. A strong buck consorts with a doe for a time and then leaves her to look for another mate. The bucks fight savagely at times, and can deliver severe blows with their hind legs. They also drum on each other with their fore feet and sometimes bite. Mr. Drane says, 'I once saw two Hares manœuvring, when one jumped over the other, so striking it with its hind feet as to disable it. The striking Hare instantly turned round, sat up, and drummed on its antagonist's body with its fore feet. During the battle there was no sound but that of the blows. My curiosity induced me to intervene. I picked up the vanquished Hare—it was dead.'

Hares breed nearly the whole year round in mild seasons, and there is not a month in the year in which young leverets have not been found. The usual pairing time is February and March in England, and March and April in Scotland. The female begins to breed when ten months or a year old, and the gestation is said to be thirty days,² but of this I am not quite certain, as I can find no one who has actually bred the animal in confinement. A curious fact is that the ovaries are capable of superfœtation; on many occasions unborn young of different ages have been discovered. The female generally produces from three to five young ones. The Rev. E. A. Woodruffe-Peacock states definitely that it is five,³ but there is not the least doubt that litters of two, three, and four are quite

¹ *Loudon's Mag.* 1829, p. 219.

² Mr. T. Speedy thinks that it is about six weeks. *Field*, September 13, 1902, p. 493.

³ He says 'Every foetal Hare I have opened has held five young ones.' *The Cultivation of the Common Hare*, p. 7; and

common in the south of England, while as many as six, seven, and eight have been recorded.¹ This disparity in the number of young may be accounted for by the fact that in Lincolnshire Hares have a habitat that is entirely suitable to them in every way, whereas in southern counties the animals are not so fine nor do they have such natural advantages. We have similar evidence of this in certain breeds of sheep. Mr. Mansell Pleydell states that in Dorset three leverets is the usual number and five is very rare. Leverets are fully furred and are able to see and move about soon after birth. In spite of her proverbial shyness the mother Hare often deposits her young in gardens where men are constantly working. Soon after the production of her young the Hare moves her family about, and will place the various individuals in different forms, visiting each at night at different times. It may be that this habit of scattering her progeny in ones and twos has led to the belief that she usually possesses only one or two young ones. The Rev. E. A. Woodruffe-Peacock says:

'This regular dispersal of their young into suckling forms soon after birth is performed at night, and very rarely witnessed. I have never seen it, but was informed that "they are carried as a cat does her kittens." It has led to the almost universal belief that Hares have only one or, at most, two leverets at a birth. If this were the case, where mustelins are common Hares would soon be extinct.'

During the period of lactation the leverets keep close to their hiding places and do not leave them until they are able to nibble vegetable food. As soon as leverets are able to feed properly the mother will not allow them to suck, and is said to drive them off her regular beat.

The first accurate account of the breeding habits of Hares was written by T. F. Dovaston. The results of his experience with certain Hares enclosed in a piece of grass land near his house were as follows. He found by close observation that the number of young was *almost always five*. The mother in every instance took her progeny one by one and deposited them in separate places in the paddock, subsequently visiting each in turn to suckle it. On the whole it must be concluded that the Hare is far more prolific than it is supposed to be.

The Rev. E. A. Woodruffe-Peacock has closely studied Hares, and makes some again he gives an instance: 'In a paddock of eight to ten acres we had three forms or seats, which, judging from their size, were evidently in the possession of young females. In late January a fourth Hare joined them, and remained for some time. He was evidently a buck, and much older and heavier, though about the same size. The male Hare, as a rule, is smaller than the doe. Hares live normally about twelve years. During the period he remained in the paddock I watched the ways of the four animals as continuously as possible. The buck changed his form twice while consorting with his companions. The result was five young in every case, but that was not the only interesting circumstance.'

¹ *Field*, September 6, 1902, p. 453; *Daily Mail*, May 1, 1906.

interesting remarks on their methods of fighting as well as the calls and sounds emitted by the animals. On page 10 of his excellent pamphlet on 'The Cultivation of the Common Hare' he says:

'Though generally regarded as so timid, the Hare only truly fears its natural adversaries—men, dogs, and vermin. Anyone who has watched them closely soon has full proof of this. If disturbed on their forms by sheep or cattle while grazing, old Hares quickly drive off the intruders by "boxing" them on the head or nose with their fore feet. They sometimes, but more rarely, bite and scratch in doing this, and, not infrequently, make a peculiar grunting and hissing sound, produced by the throat and lips together. These noises are only heard at other times when the males grow very excited in playing, or are quarrelling over a mate. The bucks at such times sit upon their hind feet for minutes together, while feinting, guarding, and heavy blows follow in rapid succession. The beast which is first grassed is generally finally vanquished. It always seeks safety in flight, pursued by its victorious rival to a greater or lesser distance, according to the number of jealous males in the immediate neighbourhood. If a champion moves off too far after a contest in a heavily stocked district, some young sprig—not infrequently more than one—is sure to put in an appearance during the master Hare's absence. On the return of the victor he may even find his younger rivals fighting fiercely for possession of his mate. They, however, always beat a hasty retreat when the master buck comes on the scene.

'Hares also make other sounds—love calls and a warning call. The latter is like the peculiar stamping with their hind feet of rabbits in its result. It is undoubtedly produced by the grinding together of their teeth. This sound always puts every Hare within hearing on the alert for danger. It may be distinctly heard in a well-stocked country by placing the ear against a dry gatepost, and then touching the gate so as to make the latch rattle. The sound is then taken up and passed on from Hare to Hare over a wide area. The guttural pipe of the doe, and the minor key of her young, as she passes from one milking form to another, are well-known sounds of the evening and early morning in the country where Hares abound.

'It is on record in "The Gamekeeper" that one of a "kindling" of tiny leverets in a turnip field showed "boxing fight" with the stick of a beater, which was introduced too near the birth-form in turning back the turnip leaves to give a full view of the family. It seems to have struck out like a full-grown Hare, "making at the same time a snuffling grunt." No phrase could describe more perfectly the sound full-grown Hares make when boxing. There is no record here of the warn-

ing note, only of the fighting sound. They are never used together. I have never heard the sound or seen the action performed by a half-grown leveret, to say nothing of a newly dropped one.'

The Hare is a remarkably silent animal, and seems to make no open-mouthed cry except the well-known scream of fear. Curiously enough, with the exception of the above-mentioned observation, little attention seems to have been devoted to the subject of sounds emitted by this animal until March 1905, when Mr. Harting published an interesting article in the 'Field.' Few writers mention any cry made by the Hare except that of fear, but Jesse says¹:

'When Hares are seeking their young at night in order to suckle them, they utter a faint cry, something like the feeble bleat of a fawn, and the leverets answer it, but in a still more feeble tone.'

Messrs. Mann of Aigle Gill possessed a female Hare which on summer nights would call softly to a wild jack Hare which came to visit her. They used to call to each other in low and plaintive tones.² While seeking information on this subject, I received the following note from Sir Richard Graham, who is a great Hare preserver: 'Bell (a very intelligent keeper on the Netherby estate) tells me that the doe Hare has a very peculiar sort of a noise she makes when she has young. It is something between a grunt and a whistle. He says that it is possible to hear the doe quite distinctly at a distance of three hundred or even four hundred yards. He also says that she runs the scent of her young ones just like a dog, and she utters the cry as she goes along. She will also sit still and bring the leverets to her side with a similar call.'

Captain Brander-Dunbar likens the call of the doe Hare to the bleating of a lamb.³ Mr. Drane, writing⁴ on the voice of the Hare, says:

'Both sounds (of fear) are uttered with wide open mouth, and resemble the repeated word "arnt," or, if you will, "aunt." I believe this is the only open-mouthed voice of the Hare. But it emits other sounds with a variety of meanings with closed mouth, which resemble our contraction "don't," "ōont," and "ōnt." I can always make my Hares say "don't" as we say "humph," without opening our lips, when we mean to indicate incredulity or contempt. This is done by a quick movement of the hand, as if to seize the creature suddenly. If the same movement is made slowly no sound is emitted. This exclamation is a very clear "don't," but

¹ *Scenes and Occupations of a Country Life*, p. 310.

² From *The Hare* by H. A. MacPherson. (Longmans' 'Fur, Feather, and Fin' Series.)

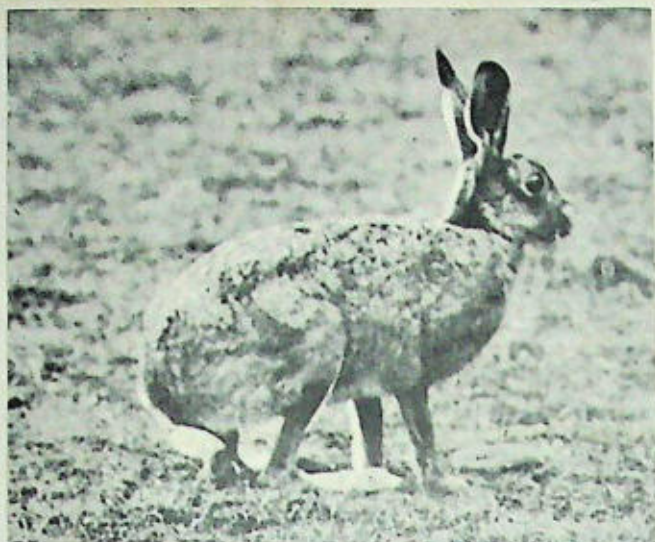
³ The cry of a leveret in pain is very like the bleating of a lamb. ⁴ *Field*, March 25, 1905.

not loud; it is indeed often only just audible. That is when one does it often, or repeatedly at one time to a Hare which is so perfectly tame that it knows no harm is threatened.

'Do Hares call each other? I will not say that they do not, but I do not believe that they do, because I have never heard them in the fields, nor in captivity, when allowed to have the free run of the house at night for the sake of exercise. I have frequently seen them pairing when the buck has held the apparently unwilling doe by his teeth, and that so repeatedly that her shoulders showed many small wounds which bled. On these occasions no sound was emitted by either of them. On one occasion I saw two bucks fighting in the pairing season, with the result that one of them died a few minutes after disablement. I watched the conflict for some minutes, and the impact of the blows delivered with the fore feet was most distinctly audible, and sounded like strokes on a small muffled drum. There was no other sound, no cry of "aunt, aunt, aunt," and no shut-mouthed "don't."

'I used to visit a friend whose house stood in about two acres of garden ground, and that completely surrounded by a wall except the entrance gate to the drive and folding doors to the stable entrance at the back. It was so secure and quiet that Hares frequented it for breeding purposes. The nightingale and goatsucker were also tenants at will. I have been about the place at all hours of the day and night, except from 3 to 6 A.M., and I had three of my Hares from its asparagus beds. I have seen these creatures at all seasons, especially by moonlight, and I have never heard them utter any sound.

'Now this statement must be taken with the admission that they do, nevertheless, "call" their young. It is on such occasions that they emit (not utter) a variation of the sound "don't" which is produced by leaving out the "d" and softening the "o," and which I should render "ōont." But this is so very subdued that in order to detect it at all the observer must be very near them—indeed, nearer than he could be in their wild state—for their hearing and sense of smell are marvellously acute, and all other noises must be quite still. How then do I know the fact? I had two Hares in captivity which twice produced young. I gave them the run of the house at night; my bedroom opens on the corridor, and the door is never shut at night. The parent Hares held high jinks; upstairs and down, along the corridor, in and out of my bedroom. The little ones could not keep pace at all with them, and would lie *perdu*. Then in the unbroken silence of the night, and within walls which would help to convey the slightest



PHOTOGRAPHS OF COMMON HARES.

By Dr. PENROSE and C. REID.

sound, I have heard the mother Hare call its young by a whispered "ōont," and have heard the response in the soft tread of the little one along the waxed floor, very different from the distinct sound made by the long, hard nails of the parents.

'Few people probably are conscious of the extreme sensitiveness of hearing and smelling in the Hare, and I doubt not that, although inaudible to us, the doe's call to her young is relatively loud.'

In old books constant references are made to 'Hare-pipes' both in the sense of 'calls' to attract the Hare within shot and as engines of destruction. When reference is made to the latter they should be spoken of as 'Hare-pipes' or 'Pipe-nets.' It would seem, therefore, that the power to call a Hare and that the animal had a voice were well known to our ancestors, to bygone poachers many centuries ago, and to a few very skilful poachers to-day. Speaking of the use of the 'Hare-pipe' as a call, Mr. Harting remarks¹:

'It is curious that this trait in the habits of the Hare has not sooner been made known by writers on natural history, the more so as it has certainly been known to poachers for many centuries. So long ago as the reign of Richard II. the game laws (13 Rich. II. c. 13) prohibited the use by unauthorised persons of dogs for hunting, ferrets, nets, Hare-pipes, or other engines to take or destroy Hares &c., and in James I.'s time the statute 1 Jac. I. c. 27 enacted that every person who should at any time take or destroy any Hares with Hare-pipes, cords, or any such instruments or other engines should forfeit for every Hare so taken or destroyed 20s. This prohibition of the use of "Hare-pipes" was continued by 22 & 23 Car. II. c. 25, as well as by 4 & 5 William and Mary, c. 23, and only dropped out of the statute book in 1831, when these and other game laws were repealed on the passing of what is now known as the principal Game Act, 1 & 2 Will. IV. c. 32. From this it is evident that through all these centuries poachers were familiar with the fact that Hares call to each other, and could be attracted by an imitation of their cry. French poachers at the present day call the buck Hares in the month of March by imitating with an ivy leaf the cry of the doe; but wooden calls made for the same purpose are also to be met with, and are described and figured in old treatises on sport and poaching. I remember to have seen one many years ago in possession of an old gamekeeper in Gloucestershire.'

¹ *Field*, March 4, 1905.

Mr. Harting in another article¹ refers to the treatise on agriculture by John Worledge (1669) in which the writer mentions the setting of Hare-pipes as traps (p. 209)²:

'The Hare is no great destroyer of corn, yet where there are many of them the countryman may lessen their number as he sees cause; either by hunting or coursing them at seasonable times, or *by setting of hare-pipes* where he finds their haunts, or by tracing them in the snow.'

Dr. Murray defines the 'Hare-pipe' as a 'trap for catching Hares' and his quotations on the subject range from 1389 to 1821.

A quotation from the 'Early English Miscellany' 'seems to show that it was of small size,' says Mr. Henry Scherren:

'I have a hare-pype in purce,
It shall be set al for thi sake.'

Mr. Scherren also gives other references to the artifice. 'The collocation,' he says,³ 'in the following, from William Lawson's "A New Orchard and Garden" (1626, p. 45), is curious:

'"For the first ranke of beasts, besides your out-strong fence you must have a faire and swift Greyhound, a Stone-bow, Gun, and if neede require, an Apple with an hooke for a Deere, and an Hare-pipe for an Hare."

'Going back some half century, we find the following passage in Turberville ("Venerie," 1575, p. 200). The spelling is modernised to avoid contractions and double letters:

'"Also it is possible to take them [otters] under the water, and by the river's side both in traps and in snares, as you may take a Hare with Hare-pipes or such like gins."

Mr. Drane kindly sends me the following note on a habit of the Hare which, being unrecorded, is interesting: 'The animal has a habit of sneezing *violently* at times when it is warm and without making any noise. These conditions contravene all our notions, for sneezing when warm and without noise is remarkable. That it actually sneezes I will not say; but if it does not I know not by what word to convey an idea of what it undoubtedly *does*. It is *warm* and very happy—quite well—does not suffer pain or inconvenience, but will have a spasmodic attack convulsing the whole body which seems *exactly* like our sneezing when we have been exposed to sudden *cold*. It sneezes violently but

¹ *Field*, March 25, 1905.

² *Systema Agriculturae*.

³ *Field*, April 1, 1905.

without noise of any kind—just as one would do, say, in church—by keeping the *mouth shut*. The Hare is essentially a silent creature; it will not even sneeze *aloud*—I am quite serious. I have observed it *many times*, but whether the “sneezing” is the same act, the result of similar conditions, as our own sneezing *physiologically* I am not prepared to say; for I take it that our own sneezing is the direct reflex action on the external nervous system of cold applied to the surface of the body as by a current of cold air. The Hare does something when warm so like our act of sneezing that the act seems similar to our actions when suppressing the desire. If the Hare sneezed aloud it would betray its presence to the enemy.’

A common attitude of both the Hare and the rabbit in repose is to lie on the side with the head erect and hind legs stretched to their fullest extent. In this position the white under parts are fully exposed and can be seen at a considerable distance. I have never seen a Hare or rabbit lay its head down as ruminants do. Speaking of other attitudes of the Hare, Mr. Drane remarks¹: ‘It will romp and roll itself with infinite delight and sprightliness on a clean white counterpane or tablecloth. Sometimes it will sit with its hind legs extended forward, so that the hind feet are in advance of the nose, and the fore feet under the nose, when it looks as if it had four fore-feet and no hind ones. Again, it will draw back its hind feet and extend its fore ones to their fullest length, and then its head seems to rise from the centre of the back. But perhaps the prettiest thing of all is to see it clean its ears. It puts its head on one side, pulls down its ear, and passes its two paws over it again and again most strikingly, like a lady dressing her hair. It can stand quite perpendicular, without support, upon its hind toes, and even advance some steps in that position, balancing itself by holding out its fore limbs horizontally.’² Its leaps are remarkable for their height, grace, and agility. It habitually overleaps its object, and comes down upon it with a curved descent, as beautifully as an antelope, thus contrasting with the cat, which scarce jumps up to the necessary height, whilst the hare overleaps it. I question whether it ever runs with its hind legs. I have had no opportunity of determining this point, and may be mistaken, but its ordinary habit is to walk and run with its fore legs and only to hop with its hind ones.’

When running at ease, the length of the Hare’s stride is about four feet; but under conditions of fear its leaps extend to ten and twelve feet, while some authors claim that it can jump fen ditches twenty to twenty-five feet in width.

¹ *The Hare in Captivity, loc. cit.* p. 8.

² Most of these attitudes will have been noticed by those who have observed rabbits closely, but that of advancing on tip-toe is certainly curious.

Perpendicularly a Hare can jump on to a five-foot wall, but seems to be non-plussed by one of about six feet.

The stride of the rabbit is about two feet; when necessary it can make leaps of six and seven feet horizontally. About three feet is the highest that a rabbit can attain to even when helped by the asperities of a stone wall.

The 'gentle Hare' pervades fable and phrase more than any other animal. All sorts of characteristics have been attributed to this charming creature. To various writers it is grave, gay, lively, severe, and pernicious. Its cunning and agility must have made its impression on early man, for we find all sorts of fables handed down by peoples living in Eastern Europe, in Asia, and in Africa. 'Brer Rabbit,' Sir Harry Johnston tells us, originally came from West Africa, and the tales brought by the West African slaves to the New World are referable to the Hare, which in the land of the primitive black races is the embodiment of all that is cunning and 'smart.' There is a good deal about 'the timid one' in early Grecian and Ionic fables, while Xenophon and Pliny both add to our knowledge of the superstitions relating to it and its strange medicinal qualities.

Shakespeare refers to it as 'melancholy,' while Kingsley speaks constantly of the 'Merry brown Hare.' Portia mentions it as mad with folly—'Such a Hare is madness the youth' she says—and Faulconbridge in 'King John' denotes it a braggart and a coward—'The Hare of whom the proverb goes, whose valour plucks dead lions by the beard'—while numerous authors speak of either its cowardice or its moroseness. Burton in his 'Anatomy' seems to think that this churlishness extends to its flesh, which he calls 'choleric meat'; while Pliny endows the meat with soporific and beautifying qualities—'The flesh induces sleep, and makes the eaters thereof beautiful.'

Cæsar expressly states that the Druids would not eat the flesh of the Hare—a curious custom, whose similarity to the ancient Jewish law has often been noticed. The Romans themselves must have attached some superstition to the animal, for once when they were besieged they were seized by a panic on the appearance of a Hare. This may in some measure explain the action of Boadicea, the British warrior-queen, who at the close of her famous oration (now regarded as purely mythical) is said to have released a Hare which she had concealed in her robe. Martial, however, has nothing but praise for the Hare, and quotations from his works might serve as a perpetual motto for the Hare-hunters of England:

'Inter quadrupedes gloria prima lepus.'

In mythology the Hare occupies a very important place. Among the South American Indians the Great Hare is supposed to be the original creator of the universe, and they regard it in the same light as the Indians of North America look upon the Great Beaver. The Hindoos attribute the spots on the moon to the outline of a translated Hare. Mr. Baring-Gould quotes an old Sanscrit fable which tells of a Hare that dwelt in the moon and which was sovereign over all earthly Hares. Sakyamuni, a Buddhist saint, was according to Buddhist legend a Hare in one of his earlier stages of existence.

The most widely spread belief in Christian countries is that the Hare is the Spirit of the corn. In Scotland, France, Italy, Germany, South Sweden, and Holland the last portion of the harvest to be reaped is called 'the Hare,' and the man who cuts it is said to have 'caught the Hare.' In some places this last bundle is modelled into the form of a Hare and treated with quaint ceremonies.

The cunning and swiftness of the animal may account for its frequent association with witches in days gone by. Not so very long ago it was evidently expected that when a Hare was shot some old crone would be found injured. 'If a Hare makes an unexpected escape from the hounds, the huntsman curses Moll White, a reputed witch,' says that fine old English character Sir Roger de Coverley, a keen hunter about whom it was said that no Hare lay safe within ten miles of his house. 'I have known the master of the pack,' says Sir Roger, 'upon such an occasion, send one of his servants to see if Moll White had been out that morning.' Many country people still consider it unlucky if a Hare crosses their path at the beginning of a journey. In Teutonic mythology the Hare was originally a bird, but was changed into a mammal by the goddess Ostara, and in grateful recognition of this strange metamorphosis it lays eggs at the festival of its patroness.

In modern literature the pet Hares of Cowper—Tiney, Puss, and Bess, all irreconcilable characters—were to the old-fashioned nurseries what our beloved friend the March Hare in 'Alice in Wonderland' is to the children of to-day.

Cowper's tame Hares do not seem to have been particularly amiable creatures, and 'to some persons, though they saw them daily, they could never be reconciled, and would even scream when they attempted to touch them.' Mr. Drane, who has had extraordinary success with these animals in confinement, speaks in quite another way, and bears witness to the docility of some of his favourite pets. He gives them a character for charm and affection which is quite touching, and completely closes his eyes to their somewhat detractive inquisitiveness.



In a letter to me (March 8, 1905) Mr. Drane says: 'I have kept captive Hares as pets for the last sixteen years, and have become very intimate with them. I have the very greatest liking for them; they are very gentlemen, just as the rabbit is a very cad. Their hearts are difficult to win, as they are so nervous, and are in fact mad with extreme sensitiveness; but they can be won, and my Hares have been as confident to me as any kitten is to a child, but even then wild to anyone else.' Speaking of the tamest of his Hares, a doe which he reared from infancy, Mr. Drane says:

'In its disposition it is pacific, trustful, and affectionate in a most touching degree when its heart has been gained, and indeed even when it has not. My Hare will always lick my hand in response to a caress, and by the same habit silently appeal to me for protection in any apprehended danger, as the presence of a stranger or of some person whom it distrusts or dislikes. It never attempts to bite; but it is not without its means of offence and defence.'

There is no doubt that Hares are difficult to tame, and from their very sensitiveness require extraordinary patience on the part of their tutor before this friendly stage is reached. The poet Cowper never seems to have attained this happy result with one of his pets, for he writes of one which he kept for ten years:

'The surliest of his kind,
Who, nursed with tender care,
And to domestic bounds confined,
Was still a wild Jack Hare.

'Though duly from my hand he took
His pittance every night,
He did it with a jealous look,
And when he could would bite.'

A short and excellent account of Hares in confinement was contributed by V. T. to the 'Field' in May 1902, and in this he gives his experience of their natures:

'In August last a keeper brought me two leverets only just able to feed themselves. They had been captured in a field of long clover, their mother being with them at the time. I put them into a low, wide tin bath, wired all round and over the top. They were at first terrified, and sat huddled together for the remainder of the day and night, refusing food of any sort. In the early hours of the morning I succeeded in feeding them with some warm milk—and again later—till, by degrees, they began to nibble clover. I tamed them by slow stages,

till they would eat from my hand and let me nurse them. But as their fear of me gradually diminished I was amazed to find how forcibly and persistently they were prepared to resent interference. They flew at me, bit and scratched me, making a most peculiar hissing sound, and so ferocious and hurtful were their attacks that I was forced to defend myself with a pair of thick gloves.

'Then followed a series of boxing matches, the assaults upon me frequently lasting several minutes, with periodical rests, when they would retreat to a corner, regain their wind, and attack me again more savagely than before. When completely beaten, they would let me stroke them and lick my hand as usual, and be friends again.

'One of these Hares is now a most engaging animal, knows me perfectly, and will jump up on to my knee, climb up and kiss me when told, sit up and beg, jump through a hoop, and shake hands, always giving the right paw. It will also seek its food when I hide it, and does all in its power to show its affection for me. It lives in the house, is loose all day, and thoroughly enjoys a good roll on the rug, where it frequently lies stretched full length before the fire. It also plays with two retriever dogs, of whom it has no fear whatever, and often lies between them while asleep. I am sorry to say that the gardener let its companion escape one day during my absence.

'In the early part of last December I received two full-grown wild Hares from Norfolk, and I was anxious to discover if it were possible to tame and train them. They sulked for a week, eating little, but I kept them near me, and by degrees tamed them, teaching them to feed from my hand, come to me when called, and sit quietly on my shoulder while I carried them about.

'Then, as with the others, when all fear of me had left them, the real trouble commenced; they flew at me, biting and scratching, and making that grunting and "hissing" sound already mentioned. Very slowly, almost despairingly so, we made friends, but unfortunately this friendship is not extended to others, who are treated with scant courtesy if they interfere with them. They know me very well, and will sniff my hand or my clothes most noticeably before allowing themselves to be touched. They possess keen intelligence, rare cunning, and a dogged determination that I have not seen equalled in any other animal. They have a peculiar method of indicating irritation or fear; unlike rabbits, which stamp their hind feet in a similar predicament, they make a loud rasping or grating sound with their teeth, which is instantly received by the others as a signal of alarm.'

A statement which I made some years ago, to the effect that the Brown Hare of the lowlands and the Mountain Hare of the hills frequently interbreed, was received with incredulity by many naturalists. At the time when I examined several of such hybrids, I was unaware of its interest zoologically, and thought that the matter was a well-known fact. Consequently I did not preserve any of the specimens I had myself seen and shot. Now, as always happens when one is absent from the hunting-grounds of former days, it is difficult to get specimens. Yet I have seen a good many such hybrids, and I am convinced that they are by no means very rare, and that I shall yet obtain them when the cares of my book are not so pressing. After severe winters in Perthshire, such as occurred in 1881, 1885, and 1894, large numbers of Mountain Hares descended to the low moors, and to the moor-woods bordering the Tay and the Earn, and stayed on through several summers until they either were shot or wandered back to their proper habitat. During these visitations they mixed indiscriminately with the Brown Hares, and undoubtedly several crosses resulted. At Murthly I shot at least ten or twelve, and one day at a big Hare-shoot at Trinity Gask (Earnside) we killed seventy-two Brown Hares, twenty-eight Blue Hares, and no fewer than six of these hybrids. I remember pointing out these curious crosses to the other guns, all experienced shooters, who were much interested in the animals.

Mr. Harting, however, and other naturalists¹ have supported my view, and at a recent meeting of the Zoological Society (April 18, 1905) Dr. Lönnberg of the Zoological Museum, Upsala, contributed a paper on this subject in which he stated that hybrids between Mountain and Brown Hares were comparatively common in Southern Sweden owing to the increased introduction of Brown Hares for sport.

Hares exhibit a marked preference for such soils as produce the different vegetables on which they live, and they cannot be induced to flourish in districts where they are scarce or absent.² Hares wired in on unsuitable grounds soon decrease and die, and if set free on such places they will travel for miles until they find a favourable habitat. The Fens of Lincolnshire, the wild open and sandy districts of Norfolk, Suffolk, and Cambridgeshire, the lowlands of Essex, and the

¹ See Harting, *Field*, May 6, 1905. Cordeaux, *Field*, September 23, 1876; McNicol and Colquhoun, *Field*, October 7, 1876; Lumsden, *Zoologist*, 1877, p. 101, and Harting, *Proc. Linn. Soc.* 1897. *Field*, June 13, 1897, Macpherson and Tegetmeier; *Field*, August 29, 1891; *Field*, January 4, 1896. Mr. W. Evans, a very careful naturalist, says in the *Mammalia of the Edinburgh District*, p. 83: 'Mr. P. Adair, who has shot many of them (White Hares) on the latter hill during the last nine or ten years, informs me he has there seen a hybrid between this and the Common Hare, and in January 1891 I examined an undoubted example from near Cardrona, in Peeblesshire.'

² One Hare to twelve acres is considered to be sufficient.

great fields of Shropshire have ever been favoured Hare resorts. Forty years ago Hares swarmed about Horncastle and Brigg in Lincolnshire, and 1767 head, mostly consisting of Hares, were killed in one day. Recently 680 Hares were killed at Lynx Wood, Newmarket, in one day, 1600 being the total of a three days' shoot.¹

In Scotland Hares are very abundant in the Border counties, and further north the Earn and the Tay Valleys are their favourite habitat. I have been present on three occasions when over a hundred Brown Hares have been killed in one day there. Donibristle in Fife is another good place. Shooting there one day in 1886 as a guest of Lord Moray, I saw sixty-three Hares killed round one large field. About Elgin and Forres Hares are also abundant. Some people enjoy shooting Hares, others do not, yet there is a certain skill required to kill them neatly, and not everyone who scorns them as beasts of the chase can invariably hit them well forward and refrain from long shots.

It is unnecessary to say anything about the various methods of coursing, shooting, and hunting the Hare with harriers, for many excellent books are devoted to the subject. It seems a pity, however, that an animal which is so valuable and which gives such a vast amount of sport and profit to Englishmen should be without any close time or proper protection. Since the adoption of Sir William Harcourt's pernicious bill everything that could be done has been done to exterminate the Hare, and now even the farmers themselves, the men for whom it was originally framed, complain that they do not get so many Hares as in the days when the landlords held the rights of preservation. They and their men have killed the 'Goose with the Golden Eggs,' and where all are selfish all lose. The greatest objection to the Ground Game Act is that it is framed without any knowledge of the natural history of the animals with which it professes to deal. In Norfolk and Lincolnshire Hares do a great amount of damage,² and are shot down very hard, yet they are so prolific that they more than hold their own. The case, however, is quite different in well populated districts such as Surrey and North Sussex, where the Hare is now becoming a rare animal.

The Hare has many enemies. Leverets in their exposed 'forms' suffer more than any animals from the attacks of vermin; and, not to mention the legitimate sportsman with the gun, poachers kill vast numbers with the common wire-snare. Almost any boy can snare a Hare at his first venture, and it only requires a knowledge of the ground and a lazy keeper for one intelligent poacher to clear

¹ See *The Hare* ('Fur, Feather, and Fin' Series).

² In Norfolk it is estimated that three Hares do as much damage to crops as one sheep.

any entire district of Hares. A smart man can often catch Hares in their 'forms' or strike them on the head with a stick. Instances are on record where two Hares have been noosed in the same wire, and on one occasion a Hare and a stoat met their death together. In the eastern counties the method of poaching Hares is simplicity itself. A butcher's cart with two lurchers drives along the road. At a gate the cart is stopped, and the field surveyed. If a Hare is observed in its 'form' or out 'on feed,' an order is given to the two dogs, one of which enters the field and sneaks to the far end of it, while the second takes up its position by the side of the gate. The cart now drives away for a short distance, and its occupants stand up and keep watch. Meanwhile the driving dog puts up the Hare and 'heads' it straight for the gate, where the second lurcher snaps it as it crawls under the lowest bar. The cart now returns and the game is quickly transferred to the 'well,' the dogs take their places under the cart, and the poachers move away. I watched such an episode one day near to Wrentham in Suffolk, and the whole affair did not take three minutes. Such smart tactics seldom fail, even where the keepers are good.

Of an old poacher, the Rev. E. A. Woodruffe-Peacock writes¹: 'Old William, referred to before, was the best poacher of Hares I have ever known. He could call them all the year round, and take them in their forms with practised ease. If he had no stick he could "fall on 'em unawares." He boasted that with the gate or trammel net, a bottle of "stinker," and a trained terrier dog, he could take every hare from a lordship, and if it were not safe to use the net he could snare all with the help of his dog. Ordinary "wirers" were laughed at as "clumsy hands." The full extent of his accomplishments I have no doubt I never knew and the keepers never suspected. I dare not put one or two instances of his cool audacity in print, for no one would believe them. In the course of a long life devoted almost wholly to poaching he was never taken red-handed and "run in," for he "worked alone," with every labouring man as his friend, but with no one in his confidence.'

Dogs, cats, and foxes all kill large numbers of leverets. Sometimes the badger does not despise them in his nocturnal forays, and an otter has been seen chasing a Hare.² All large raptorial birds kill them, and the brown owl is not entirely innocent. Rabbits have the greatest objection to Hares, and will give them no peace until they have driven them away from the neighbourhood of their burrows. The rabbit, too, is much more aggressive and plucky in resisting the

¹ *The Cultivation of the Common Hare*, pp. 17, 18.

² *Field*, 1901, p. 442.