ART. XVIII.—*Objections to the Introduction of Beasts of Prey to destroy the Rabbit.* By H. B. MARTIN.

(*Read before the Nelson Philosophical Society, 2nd June*, 1884.)

THIS paper deals specially with the weasel (*Mustelidæ*) and ichneumon (*Viverridæ*) families; but much that can be said against them will apply to any other beast of prey. I use the names of ichneumon and weasel to denote respectively the Indian ichneumon (mungoos) and the weasel, with all allied beasts of similar habits.

1. The introduction of these beasts of prey to destroy the rabbit is unnecessary; for poisoning with phosphorized corn succeeds well, even in spring and summer, when there is abundance of feed, while tuberculosis (which has recently broken out among the rabbits in Otago) will probably destroy them more thoroughly than any other means would. In various parts of the Auckland district the rabbits have become almost or quite extinct from natural causes;* tuberculosis was also believed to be present in the Wairau Valley, where the rabbits were beginning to decrease before the present Act was in force.

2. Having no natural enemies here, and their furs being of very inferior quality in this climate, there would be no adequate check upon them, and they would therefore increase and spread as the rabbit has done. In Canada and other northern regions the weasels are killed in great numbers for their furs, and are also preyed on by larger beasts of prey, while in more settled districts their ravages among game and poultry cause them very generally to be destroyed, yet with all this they are in no danger of extinction, even where most persecuted, the intermission caused by changes of fashion sufficing in two or three years to restore them to their former numbers; and in England the stoat and weasel are so common, though freely destroyed, that it would seem impossible to exterminate them. The beasts of prey that have been, or are being introduced are the stoat, weasel, ferret, and Indian mungoos, all very prolific, as the following facts will show. The weasel has at least 2, perhaps 3, litters annually of 4 or 5 each, the stoat has 5 at a birth, and the polecat also 4 or 5; while the ferret (at home) has 2 litters in a year of 6 to 9 each. I am not able to give the rate of increase of the mungoos, but in Jamaica, where it was introduced to destroy the sugar rats, it has apparently increased much faster than in India, having in ten years completely overrun that island, even to the tops of the highest mountains (7,000 feet), and though it has certainly reduced the rats, it kills all other animals it can (as the weasel and stoat do also), so that all species of ground birds, fresh water and sea fowl, are rapidly

*Hansard No. 7, pp. 342-3, 1883.

diminishing before it.* It would thus appear from these facts, that it has not yet reached its limit of increase, but that it must before long do so, becoming a pest which (Jamaica being a very mountainous country, well wooded and well watered) it would be impossible to extirpate entirely, and even if this were partially accomplished it is scarcely probable that it would be in time to prevent the extermination of at least some valuable native birds. It is therefore evident that these beasts being naturally prolific will in a new country be much more so; as are the hare, rabbit, and I may add the fox also, as it is said to have become already a pest in Victoria. A ferret in this district has been known to have 14 young at a birth, the number at home being, as above-mentioned, 6 to 9. It must be remembered that the destruction of these vermin is forbidden by law, and that not only will those to whom they are useless, or positively mischievous, be now prevented from destroying them, but they will be compelled when these beasts become a pest to destroy them at their own expense (as with the rabbits) in addition to whatever loss or injury they may have suffered from them, and without regard to the fact that they may not only have had no hand in the introduction of these vermin, but have been consistently opposed to it.

3. It appears, therefore, that it will be very difficult, probably impossible, to exterminate them, especially in rough or wooded country.

4. They have no marked preference for any one species of animal, but habitually live on birds and small mammals, so that being very lithe and agile, and for the most part active climbers and bold swimmers, no species of bird would escape their ravages, which would be the more destructive as both weasels and ichneumons are nocturnal animals. The stoat, for example, can climb any tree, and is so light and active, that any branch is accessible to it that will bear the weight of nest and eggs, and it is particularly destructive to game and poultry, while being an excellent swimmer it might prove very destructive to fish, especially if a good diver (like the polecat, which is able to catch eels), as it probably is.

5. The weasels habitually destroy large numbers of animals from mere love of killing, and very frequently do no more than suck the blood or eat the brains of their prey, habits which, whatever recommendation they may be in regard to the rabbits, must certainly lead to the extermination of many native birds, and those the most valuable and curious, such as cannot be adequately replaced by any foreign species. Furthermore, both "game" and "native game" would be very greatly reduced, the latter probably exterminated. The hare, too, would share the fate of the rabbit, as when it finds itself tracked by a stoat or weasel, it seems to despair of escape, and is killed without difficulty.

* Sc. American, 24th March, 1883.

6. Being fearless and bloodthirsty above all other beasts in proportion to their size, there will be no inconsiderable danger of their killing lambs, calves, and other domestic animals, and even human beings, as the following instances from Wood's "Natural History" show:—Two martens killed in one night fourteen lambs out of a flock of twenty-one, and the next night killed the other seven. The marten is in proportion to its size one of the most bloodthirsty of beasts, though less so than the true weasels.* The marten is 18 inches long, the stoat 10 inches, the weasel 8 inches. Of the mungoos I am not certain, but the Egyptian ichneumon, which is very similar, is 18 inches long. The length of the tail is excluded in each case.

Two gentlemen who were riding together having halted, one dismounted, leaving his companion to hold his horse. Presently a weasel came out of the hedge and fastened on to the fetlock of one of the horses, retaining its hold until it was killed.

A strong man was in one instance so beset by weasels, that he had no time to kill them, but could only pluck them off and throw them to the ground, so that he would soon have been killed but for a horseman who came to the rescue with his whip.

In another case a colony of weasels attacked (without any provocation) various persons that were passing by their home.

A gentleman happening to see a couple of stoats by the road side picked up a stone and threw it at them, knocking one over, on which the other instantly calling out to its companions a number immediately came out of the hedge and attacked him; he, fortunately having a woollen comforter on, protected his throat with it and his hands, and ran for his house, a distance of nearly four miles, several stoats being taken off him when he reached home.

The ichneumons and weasels invariably direct their attacks at the throat or the back of the head, according to the nature of the animal attacked, so that a single bite is fatal, an attack by a weasel or stoat being the more dangerous, as they (and perhaps the mungoos also) aid one another at call; they possess too no inconsiderable strength for their size, as evidenced by a weasel leaping at and bringing down a partridge from a covey flying above two feet from the ground. The weasels are also very irritable, and are apt to take offence where none is intended, so that children would be liable to their attacks, the more so as the true weasels (*Putorius*) are fond of living in stone heaps and outbuildings.

It is well known that the ferret will attack infants, and shows extreme ferocity if interfered with in such cases, an instance of which is given in Wood's "Natural History." Some sheepfarmers perhaps hope that these

* Enc. Brit., Art. Marten.

beasts will exterminate the kea, but I do not see that this will be any gain, because, in coming in contact with the kea, they cannot avoid finding wounded and dying sheep, which they would attack, and this, with the slaughtering of sheep on the out-stations, would be to them the best possible training for sheep-killing, if any is necessary; and any larger beast or any bird that would attack the kea would have no hesitation in killing sheep also. As to the question of extirpating these beasts where they may become a pest, the following example from Wood's "Natural History" is worth noticing: A number of rats established themselves by a fishpond, devouring the fish and doing much other mischief, so that the owner was much pleased when a colony of weasels came and, having killed or driven away the rats, settled in their place. For a time all went well, but presently, other food failing them, the weasels began to kill rabbits, poultry, etc., so that the owner became as desirous to destroy them as he had been the rats, but he failed to do so, and the weasels remained in triumphant possession.

Mr. T. Bent, M.L.A., of Victoria, is of opinion, as the result of information gathered on a visit to India, that the mungoos will become as great a pest in these colonies as the rabbit. This result would equally attend the naturalization of either ichneumons or weasels, as the former are practically but tropical weasels and probably resemble them in nature and habits much more than I have stated.

The importation of these beasts should therefore be stopped and those already at liberty destroyed, at whatever cost; if this be done without delay, I do not think it is now too late to extirpate them.

For further information on the *Mustelidæ* and *Viverridæ* see Wood's "Natural History" and the "Encyclopædia Britannica," Arts. Ermine, Ferret, Fur, Ichneumon, Mammalia, and those on northern countries.

ART. XIX.—*A short Description of a few Experiments bearing on the Question of Spontaneous Generation.* By DR. J. HUDSON.

[*Read before the Nelson Philosophical Society, 3rd November*, 1884]

THE few remarks contained in this short paper, are written with the object of eliciting discussion.

The question of spontaneous generation is not by any means a new one, nor is it confined to the learned, for I have frequently heard ignorant hospital patients account for the parasites with which they were infested, by saying that they bred them, meaning that they arose spontaneously, and that no amount of care would prevent their development. Practically, the