

DOMESTICATION AND ACCLIMATIZATION OF WILD MAMMALS

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The steps by which man rose from the savage state and attained his present degree of enlightenment are marked by the progress he made in domesticating animals and plants and subjugating them to human uses. Could we fully know the history of our domestic animals it would enable us to understand the processes by which the races of men came to the mastery of things about them. Primitive man must have especially lacked forethought for future seasons, and it is possible that he first acquired it through the necessity of making provision for the animals which he possessed.

After primitive man had taken a few steps in domesticating wild animals and when he saw that the results had contributed to his comfort and happiness, he had a strong incentive to further achievements in taming other animals and plants. The process of domestication went forward slowly until he had tamed all the animals and plants we now have in possession. Man has been uplifted by the process as well as by the results. His association with lower forms of life in domestication has enlarged his sympathies for all life and has the better fitted him for intercourse with his fellows.

And yet comparatively few of the higher and more useful forms of animal life, mammals and birds, have been domesticated. Of about 5,000 species of mammals now inhabiting the world, only about 25 may be said to be really serving man as beasts of burden or furnishing him with food, clothing, or companionship while in a state of dependence upon him. Of birds, the proportion of domesticated species is even smaller. No important increase in the list of animals under domestication has been made in the last five hundred years. In the plant world, on the contrary, the last few centuries have witnessed a wonderful development of new forms under domestication.

The preceding statement is not meant to imply that our domestic animals have been neglected. Most of them have been plastic in the hands of breeders, their value has been greatly increased and will be still further enhanced as the years pass. Nor have agriculture and commerce alone benefited from the study of our domestic animals. Science has been equally enriched. The influence upon the doctrine of evolution and theories of heredity and sociology can not be overestimated. Comparative anatomy, embryology, physiology, hygiene,

and preventive medicine have all been enriched by the study, and practical surgery owes its progress in large measure to the knowledge gained from investigations made with domestic animals. The mammals have afforded the best field for this research.

Several practical objects are to be attained by further efforts to domesticate wild mammals. Who will say that more beasts of burden would not benefit the world? The zebra and the African elephant may well repay their subjugation in their native land. Then there is the matter of conserving and increasing our supply of furs. The most rational expedient seems to be the breeding of fur bearers in domestication or partial domestication. This, too, presents the only means of preventing the loss of species through extermination. The extinction of the quagga and the blaubok from the South African fauna could easily have been prevented had forethought been applied to their preservation.

The charge has been made that the desire merely to preserve a species is sentimental and has no practical value. I maintain that in this matter both sentiment and economy are worthy of consideration. A large number of the species that have come under human control were first tamed solely for the pleasure they could afford their possessors. This is true especially of flowering and other ornamental plants and of some animals, as, for instance, the canary. In a measure, this is always considered in the selection of species and individuals for breeding, and it must have a marked influence in deciding the fitness of wild species of mammals for domestication.

From the economic standpoint, the strongest argument for attempting to breed wild mammals in captivity is the production of food for the human race. The American pioneer found a great variety of game in our forests. But this source of food has diminished until few can avail themselves of it, and we are coming to a time when the production of game in preserves is the only way to have it. Yet our aim should be not so much to furnish more game for sportsmen as to provide a greater variety of food for the people.

Two sources of additions to our present list of domestic animals are possible. The first, and the more desirable, is to select from our native species of fur or game animals. These require no preliminary experiments in acclimatization. The other plan is to bring in exotic species. The selection of a foreign species for introduction and experiment must depend on a similarity between its natural and the proposed habitat or on its probable adaptability to the new surroundings. This adaptation may sometimes be judged from the history of former

attempts to acclimatize it or its near relatives. For this purpose the experience of zoölogical parks becomes helpful. But in a country so large and so varied in climate as ours the same general principles must be considered before transferring a native species from one locality to another.

Of our native mammals, two kinds of deer have proved themselves adapted to every part of the United States and have done well in confinement under nearly all circumstances. These are the wapiti, which we miscall the elk, and the common white-tailed, or Virginia, deer. Both promise to become important sources of food and of great economic value. The other species of American deer seem to be less adapted to life outside their natural range. The same is true of the pronghorn, or American antelope. While the bison is apparently perfectly hardy in all parts of the country, it is doubtful if it could be made of sufficient utility, even if bred in large numbers, to take the place of the cattle which it would displace on some of the ranges. Its extreme hardiness is the chief factor in its favor. Yet in spite of the high value of buffalo robes, cattle raised on the same area would probably pay better than the bison. On the other hand, deer can be raised on areas unsuited to cattle and utilize much land now unproductive.

Of our native fur animals, several species are worthy of patient experiments in breeding them in confinement. The beaver, the otter, the black and silver foxes, the marten, the mink, and even the skunk and the muskrat present possibilities for the breeder who is also a patient investigator. Thus far success has crowned very few of the efforts to produce furs in captivity. It remained for a Belgian, one Johan Beetz, living in remote Labrador, to show that the common red fox when bred with black stock produces a preponderance of black and silver offspring. In five generations the red stock had given way to black; and, in a letter to the Department of Agriculture, Beetz claims that he has now purebred black foxes without apparent tendency of reversion to the red type. This would seem to show that the black is probably the ancestral form of our red foxes.

While our native species should have first consideration as subjects for experiments in domestication, many exotic species might be profitably acclimatized either as wild game or to be bred in captivity by our people. The list of species available is too great for more than general mention.

The Old World antelopes, members of the family Bovidæ, include many valuable food animals. In Africa there are more than a hundred species, many of them hardy and most of them excellent game.

Fully a score of species would be promising subjects for acclimatizing in America. Africa, like our own country, has arid sections, and some of her antelopes are probably especially adapted to the desert lands of our Southwest, and might be used to restock parts of that region from which our own pronghorn has been exterminated.

The eland (*Taurotragus*), the largest of the antelope family, is threatened with extermination over the greater part of its range in South Africa. Its average weight is from 800 to 1,100 pounds, and old males have been known to attain a weight of 1,400 to 1,500 pounds. This animal has often been recommended for rearing in captivity because of the excellence of its flesh, which is said to be superior to beef. Harris, the African traveler, states that while it resembles beef in grain and color, it is far better flavored and more delicate, possesses a pure game flavor, and is remarkable for the quantity of fat interlarded between the muscles.

The eland was introduced into Holland by the Prince of Orange in 1783. It was acclimatized in England by the Earl of Derby in 1842, and was bred successfully in his parks. After his death the herd passed into possession of the London Zoölogical Society in 1851, and continued to increase in numbers for many years. In 1899 the Duke of Bedford had a fine herd of 14 elands in the park at Woburn Abbey.

The scarcity of this game animal in a wild state and the consequent cost of obtaining stock would probably make experiments in breeding it in the United States prohibitive to individual enterprise. However, the experience with the animal in Europe gives assurance that efforts to acclimatize it in the United States would be successful.

The eland is only one example from a long line of exotic antelopes that might prove valuable in the United States. The deer family represents another equally important class, from which, besides the already partly domesticated fallow deer, there might be taken the sambar, the axis deer, the swamp deer, the Chinese water deer, the muntjacs, and other promising representatives. In suggesting the acclimatizing of these animals in the United States, we do not advocate their indiscriminate introduction nor the immediate release of any of them to resume their wild life. The history of the introduction of beneficial animals into new localities should teach caution in such experiments. Even species fully domesticated have become injurious when neglected and allowed to run wild. Devastations of crops by horses, cattle, pigs, and goats, introduced into new countries for domestic use and afterwards abandoned, have been known in many parts of the world. The destruction of native birds and mammals

by dogs and cats that have gone wild furnishes an equally valid argument for caution. Probably less danger attends the acclimatization and release of the class of animals under discussion than any other; and yet it is known that deer and antelope under certain circumstances have increased so enormously as to destroy important crops. Ordinarily should they prove injurious in the United States, the removal of protection would be followed by their speedy extermination as game.

The history of former attempts to acclimatize exotic animals in the United States is interesting. Fallow deer and red deer were successfully kept in some of the early deer parks of Maryland and Virginia. Washington kept both fallow deer and native Virginia deer on his Mt. Vernon estate. In recent years red deer have been introduced into some of our larger game preserves in America, but apparently have not thrived as well as our native species. A few years ago an organization of California sportsmen proposed to introduce gazelles in our Southwest, but thus far no importations have been made. The great camel experiment made by the War Department before the Rebellion has been regarded as a failure; but as an experiment in acclimatizing the animals it was really a great success, for they proved to be well adapted to our southwestern conditions. That they should prove unprofitable as army transports was an entirely different matter.

The alpaca experiments of sixty or seventy years ago were unsuccessful because attended by lack of judgment as to the localities suitable for the animals. For many years agitation was rife for a trial of the alpaca as a wool producer in northern latitudes. As early as 1840 alpaca societies existed in both England and the United States. A memoir on the alpaca written by a Mr. Walton was published in London and had wide circulation. Several wealthy men in England and Scotland imported the animals for breeding. Queen Victoria and Prince Albert in 1845 appeared in court robes made of alpaca wool grown in the park at Windsor. The largest shipment of the animals for the United States came from Aspinwall in 1859 on the brig *E. Drummond*. The total shipment was 71 animals, but 29 died during a severe storm and only 42 were landed in New York. Some were taken to places in New York state and New England, but it was soon found that the animals were equally unsuited to the humid climates of Great Britain and the Northeastern United States. Had they been introduced into the arid western country, they would probably have thrived as well as they do on the Pacific Slope of South America, their natural home.

The time for beginning experiments in the introduction of foreign food animals and for scientific attempts to breed our native game and fur animals in captivity has surely arrived. To delay them much longer is to permanently lose the opportunity for some. The well-located game reservations now existing, the government experiment stations, and the national parks afford the best of surroundings for the experiments. The men for conducting them can be obtained. The expenditures for stock, transportation, fences, buildings, and maintenance need not be a great drain upon either private or public resources. Only moderate appropriations would be required; but permanency of the establishment would be a necessary condition, for the problems are not of a kind that can be solved in a few years. A wild species cannot be domesticated during the life of a single generation of man. Yet the economic benefits from such experiments as I have suggested need not wait for the full domestication of a single species. Some of the advantages can be reaped within a decade after the experiments are inaugurated.

REPORT OF COMMITTEE ON HEREDITY OF FEEBLE-MINDEDNESS*

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During the past sixty years the care and training of feeble-minded children has grown from a small beginning, in a private residence in a New England town, to a point where approximately 19,000 of this class are cared for in about fifty public and private institutions in the United States. It has been a period devoted to extension and the development of a policy with regard to the class. Research concerning its etiology has necessarily received but secondary consideration. Its desirability has been recognized throughout, but financial support for it has not been forthcoming. In token of the recognized desirability of research, the institutions for the feeble-minded in this country have been, during this entire period, gathering such data as the parents, friends, and relatives of the beneficiaries of the institution would voluntarily furnish, either at the time of the admission of the latter or during interviews, as occasion afforded opportunity at various times afterward. These data have never been considered of very great value and have been used only to illustrate the large

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