

If there be the least African blood in the child, though there be every appearance common to the white race, even the straight black hair, it is, according to law, a Negro."

According to the laws of the state of Tennessee, no white person can intermarry with a Negro, Mulatto, or other person of mixed blood down to the third generation. All marriages contracted contrary to this rule are declared null and void, the parties being besides considered guilty of a misdemeanour, and punishable by fine or imprisonment, or both, at the discretion of the judge. The laws of the state of Indiana go a step further, for by them "one eighth" part of Negro blood vitiates a marriage and bastardises the children. The state of Massachusetts adds Indians to Negroes in their proscription, and that of Oregon wholly excludes Negroes and even Chinese from its territory.

It is the presence of this African race, too prone to live and labour in slavery or in social degradation, and utterly incapable of rising to an equality with the higher race among whom it has been unhappily planted, that has caused the present distracted state of the North American continent.

## XII.—*The First Steps towards the Domestication of Animals.* By FRANCIS GALTON, F.R.S.

THE domestication of animals is one of the few relics of the past whence we may reasonably speculate on man's social condition in very ancient times. We know that the domestication of every important member of our existing stock originated in pre-historic ages, and, therefore, that our remote ancestors accomplished in a variety of cases, what we have been unable to effect in any single instance.

The object of my paper is to discuss the character of ancient civilisation, as indicated by so great an achievement. Was there a golden age of advanced enlightenment? Have extraordinary geniuses arisen who severally taught their contemporaries to tame and domesticate the dog, the ox, the sheep, the hog, the fowl, the camel, the llama, the reindeer, and the rest? Or again, Is it possible that the ordinary habits of rude races, combined with the qualities of the animals in question, have sufficed to originate every instance of established domestication?

The conclusion to which I have arrived, is entirely in favour of the last hypothesis. My arguments are contained in the following paper; but I will commence by stating their drift, lest the details I introduce should seem trifling or inconsequent. It will

be this:—All savages maintain *pet* animals, many tribes have *sacred* ones, and kings of ancient states have *imported* captive animals, on a vast scale, from their barbarian neighbours. I infer that every animal, of any pretensions, has been tamed over and over again, and has had numerous opportunities of becoming domesticated. But the cases are rare in which these opportunities can lead to any result. No animal is fitted for domestication unless it fulfils certain *stringent conditions*, which I will endeavour to state and to discuss. My conclusion is, that all domesticable animals of any note, have long ago fallen under the yoke of man. In short, that the animal creation has been pretty thoroughly, though half unconsciously, explored, by the every-day habits of rude races and simple civilisations.

*Pets.*—It is a fact familiar to all travellers, that savages frequently capture young animals of various kinds, and rear them as favourites, and sell or present them as curiosities. Human nature is generally akin: savages may be brutal, but they are not on that account devoid of our taste for taming and caressing young animals; nay, it is not improbable that some races may possess it in a more marked degree than ourselves, because it is a childish taste with us; and the motives of an adult barbarian are very similar to those of a civilised child.

In proving this assertion, I feel embarrassed with the multiplicity of my facts. I have only space to submit a few typical instances, and must, therefore, beg it will be borne in mind that the following list could be largely re-inforced. Yet even if I inserted all I have thus far been able to collect, I believe insufficient justice would be done to the real truth of the case. Captive animals do not commonly fall within the observation of travellers, who mostly confine themselves to their own encampments, and abstain from entering the dirty dwellings of the natives; neither do the majority of travellers think tamed animals worthy of detailed mention. Consequently the anecdotes of their existence are scattered sparingly among a large number of volumes. It is when those travellers are questioned, who have lived long and intimately with savage tribes, that the plenitude of available instances becomes most apparent.

I proceed to give anecdotes of animals being tamed in various parts of the world, at dates when they were severally beyond the reach of civilised influences, and where, therefore, the pleasure taken by the natives in taming them must be ascribed to their unassisted mother-wit.

I will, then, leave it to be inferred that the same rude races who were capable of great fondness towards animals in particular instances, would not unfrequently show a little of it in others.

*North America.*—The traveller Hearne, who wrote towards the

end of the last century, relates the following story of moose or elks in the more northern parts of North America. He says, "I have repeatedly seen moose at Churchill as tame as sheep and even more so. . . . The same Indian that brought them to the Factory had, in the year 1770, two others so tame, that when on his passage to Prince of Wales's Fort in a canoe, the moose always followed him along the bank of the river; and at night, or on any other occasion when the Indians landed, the young moose generally came and fondled on them, as the most domestic animal would have done, and never offered to stray from the tents."

Sir John Richardson, in an obliging answer to my inquiries about the Indians of North America, after mentioning the bison calves, wolves, and other animals that they frequently capture and keep, says, "It is not unusual, I have heard, for the Indians to bring up young bears, the women giving them milk from their own breasts." He mentions that he himself purchased a young bear, and adds, "The red races are fond of pets and treat them kindly; and in purchasing them there is always the unwillingness of the women and children to overcome, rather than any dispute about price. My young bear used to rob the women of the berries they had gathered, but the loss was borne with good nature."

I will again quote Hearne, who is unsurpassed for his minute and accurate narratives of social scenes among the Indians and Esquimaux. In speaking of wolves, he says, "They always burrow underground to bring forth their young, and though it is natural to suppose them very fierce at those times, yet I have frequently seen the Indians go to their dens, and take out the young ones and play with them. I never knew a Northern Indian hurt one of them; on the contrary, they always put them carefully into the den again; and I have sometimes seen them paint the faces of the young wolves with vermilion or red ochre."

*South America.*—Ulloa, an ancient traveller, says, "Though the Indian women breed fowl and other domestic animals in their cottages, they never eat them: and even conceive such a fondness for them, that they will not sell them, much less kill them with their own hands. So that if a stranger who is obliged to pass the night in one of their cottages, offers ever so much money for a fowl, they refuse to part with it, and he finds himself under the necessity of killing the fowl himself. At this his landlady shrieks, dissolves into tears, and wrings her hands, as if it had been an only son; till seeing the mischief past mending, she wipes her eyes and quietly takes what the traveller offers her."

The care of the South American Indians, as Quiloa truly states, is by no means confined to fowls. Mr. Bates, the distinguished traveller and naturalist of the Amazons, has favoured me with a list of twenty-

two species of quadrupeds that he has found tame in the encampments of the tribes of that valley. It includes the tapir, the agouti, the guinea-pig, and the peccari. He has also noted five species of quadrupeds that were in captivity, but not tamed. These include the jaguar, the great ant-eater, and the armadillo. His list of tamed birds is still more extensive.

*North Africa.*—The ancient Egyptians had a positive passion for tamed animals such as antelopes, monkeys, crocodiles, panthers, and hyenas. Mr. Goodwin, the eminent Egyptologist, informs me that "They anticipated our zoological tastes completely," and that some of the pictures referring to tamed animals are among their very earliest monuments, viz., 2000 or 3000 years B.C. Mr. Mansfield Parkyns, who passed many years in Abyssinia and the countries of the Upper Nile, writes me word, in answer to my inquiries, "I am sure that Negroes often capture and keep alive wild animals. I have bought them and received them as presents—wild cats, jackals, panthers, the wild dog, the two best lions now in the Zoological Gardens, monkeys innumerable and of all sorts, and mongoos. I cannot say that I distinctly recollect any pets among the *lowest* orders of men that I met with, such as the Denkas, but I am sure they exist, and in this way. When I was on the White Nile and at Khartoum, very few merchants went up the White Nile; none had stations. They were little known to the natives; but none returned without some live animal or bird which they had procured from them. While I was at Khartoum, there came an Italian wild beast showman, after the Wombwell style. He made a tour of the towns up to Doul and Fazogly, Kordofan and the peninsula, and collected a large number of animals. Thus my opinion distinctly is, that Negroes do keep wild animals alive. *I am sure of it*; though I can only vaguely recollect them in one or two cases. I remember some chief in Abyssinia who had a pet lion which he used to tease, and I have often seen monkeys about huts."

The most remarkable instance I have met with in modern Africa, is the account of a menagerie that existed up to the beginning of the reign of the present boy king of the Wahumas, on the shores of Lake Nyanza. Suna, the great despot of that country, reigned till 1857. Captains Burton and Speke were in the neighbourhood in the following year, and Captain Burton thus describes (*Journal R. G. Soc.*, xxix, 282) the report he received of Suna's collection. "He had a large menagerie of lions, elephants, leopards, and similar beasts of disport; he also kept for amusement fifteen or sixteen albinos; and so greedy was he of novelty that even a cock of peculiar form or colour would have been forwarded by its owner to feed his eyes." Captain Speke, in his subsequent journey to the Nile, passed many months at

Uganda, as the guest of Suna's youthful successor, M'tese. The fame of the old menagerie was fresh when Captain Speke was there. He writes to me, as follows, concerning it. "I was told Suna kept buffaloes, antelopes, and animals of all 'colours' (meaning 'sorts'), and in equal quantities. M'tese, his son, no sooner came to the throne, than he indulged in shooting them down before his admiring wives, and now he has only one buffalo and a few parrots left."

In Kouka, near Lake Tchad, antelopes and ostriches are both kept tame, as I am informed by Dr. Barth.

*South Africa.* The instances are very numerous in South Africa, where the Boers and half-castes amuse themselves with rearing zebras, antelopes, and the like; but I have not found many instances among the native races. Those that are best known to us are mostly nomad and in a chronic state of hunger, and therefore disinclined to nurture captured animals as pets; nevertheless, some instances can be adduced. Livingstone alludes to an extreme fondness for small tame singing birds (pp. 324 and 453). Dr. Kirk, who accompanied him in later years, mentions guinea-fowl,—that do not breed in confinement and are merely kept as pets,—in the Shiré valley, and Mr. Oswell has furnished me with one similar anecdote. I feel, however, satisfied that abundant instances could be found, if properly sought for. It was the frequency with which I recollect to have heard of tamed animals when I myself was in South Africa, though I never witnessed any instance, that first suggested to me the arguments of the present paper. Dr. Kirk informs me that, "As you approach the coast or Portuguese settlements, pets of all kinds become very common; but then the opportunity of occasionally selling them to advantage, may help to increase the number; still, the more settled life has much to do with it."

In confirmation of this view, I will quote an early writer, Pigafetta (Hakluyt Coll., ii, 562), on the South African kingdom of Congo, who found a strange medley of animals in captivity, long before the demands of semi-civilisation had begun to prompt their collection. The king of Congo on being Christianised by the Jesuit missionaries in the sixteenth century, "signified that whoever had any idols should deliver them to the lieutenants of the country. And within less than a month all the idols which they worshipped were brought into court, and certainly the number of these toys was infinite, for every man adored what he liked without any measure or reason at all. Some kept serpents of horrible figures; some worshipped the greatest goats they could get; some leopards, and others monstrous creatures. Some held in veneration certain unclean fowls, etc. Neither did they content themselves with worshipping the said creatures when alive, but also

adored the very skins of them, when they were dead and stuffed with straw."

*In Australia,* where the natives rank as the lowest race upon the earth, Mr. Woodfield records the following touching anecdote, occurring in an unsettled part of West Australia, in a paper communicated to the Ethnological Society. "During the summer of 1858-9, the Murchison river was visited by great numbers of kites, the native country of these birds being Shark's bay. As other birds were scarce, we shot many of these kites, merely for the sake of practice, the natives eagerly devouring them as fast as they were killed. One day a man and woman, natives of Shark's bay, came to the Murchison, and the woman immediately recognising the birds as coming from her country, assured us that the natives there never kill them, and that they are so tame that they will perch on the shoulders of the women and eat from their hands. On seeing one shot, she wept bitterly, and not even the offer of the bird could assuage her grief, for she absolutely refused to eat it. No more kites were shot while she remained among us."

The Australian women habitually feed the puppies they intend to rear, from their own breasts, and show an affection to them equal, if not exceeding, that to their own infants. Sir Charles Nicholson informs me that he has known an extraordinary passion for cats to be demonstrated by Australian women at Fort Phillip.

*New Guinea Group.* Captain Develyn is reported (Bennett, *Naturalist in Australia*, p. 244) to say of the island of New Britain, near Australia, that the natives consider cassowaries "to a certain degree sacred, and rear them as pets. They carry them in their arms and entertain a great affection for them."

Professor Huxley informs me that he has seen sucking pigs nursed at the breasts of women, apparently as pets, in islands of the New Guinea group.

*Polynesia.*—The savage and cannibal Fijians are no exceptions to the general rule, for Dr. Seemann writes me word that they make pets of the flying fox (bat), the lizard, and parroquet. Captain Wilkes, in his exploring expedition (ii, 122), says the pigeon in the Samoan islands, "is commonly kept as a plaything, and particularly by the chiefs. One of our officers unfortunately on one occasion shot a pigeon, which caused great commotion, for the bird was a king pigeon, and to kill it was thought as great a crime as to take the life of a man."

Mr. Ellis, writing of these islands (*Polynesian Researches*, ii, 285), says, "Eels are great favourites, and are tamed and fed till they attain an enormous size. Taoarii had several in different parts of the island. These pets were kept in large holes, two or three feet deep, partially filled with water. I have been several

times with the young chief, when he has sat down by the side of the hole, and by giving a shrill sort of whistle, has brought out an enormous eel, which has moved about the surface of the water and eaten with confidence out of his master's hand."

*Syria.* I will conclude this branch of my argument by quoting the most ancient allusion to a pet that I can discover in writing, though some of the Egyptian pictured representations are considerably older. It is the parable spoken by the Prophet Samuel to King David, that is expressed in the following words, "The poor man had nothing save one little ewe lamb, which he had bought and nourished up: and it grew up together with him and with his children; it did eat of his own meat, and drank of his own cup, and lay in his bosom and was to him as a daughter."

*Sacred Animals.*—We will now turn to the next stage of our argument. Not only do savages rear animals as pets, but communities maintain them as sacred. The ox of India and the brute gods of Egypt occur to us at once; the same superstition prevails widely. The quotation already given from Pigafetta, is in point; the fact is too well known to readers of travel, to make it necessary to devote space to its proof. I will, therefore, simply give a graphic account, written by M. Jules Gérard at Whydah, in West Africa. "I visited the Temple of Serpents in this town, where thirty of these monstrous deities were asleep in various attitudes. Each day at sunset, a priest brings them a certain number of sheep, goats, fowls, etc., which are slaughtered in the temple and then divided among the 'gods.' Subsequently during the night they (? the priests) spread themselves about the town, entering the houses in various quarters in search of further offerings. It is forbidden under penalty of death to kill, wound, or even strike one of these sacred serpents, or any other of the same species, and only the priests possess the privilege of taking hold of them, for the purpose of reinstating them in the temple should they be found elsewhere."

It would be tedious and unnecessary to adduce more instances of wild animals being nurtured in the encampments of savages, either as pets or as sacred animals. It will be found on inquiry that few travellers have failed altogether to observe them. If we consider the small number of encampments they severally visited in their line of march, compared with the vast number that are spread over the whole area, which is or has been inhabited by rude races, we may obtain some idea of the thousands of places at which half unconscious attempts at domestication are being made in each year. These thousands must themselves be multiplied many thousand-fold, if we endeavour to calculate the number of similar attempts that have been made since men like ourselves began to inhabit the world.

My argument, strong as it is, admits of being considerably strengthened by the following consideration:—

*Menageries.*—The natural inclination of barbarians is often powerfully reinforced by an enormous demand for captured live animals on the part of their more civilised neighbours. A desire to create vast hunting-grounds and menageries and amphitheatrical shows, seems naturally to occur to the monarchs who preside over early civilisations, and travellers continually remark that, whenever there is a market for live animals, savages will supply them in any quantities. The means they employ to catch game for their daily food, readily admits of their taking it alive. Pit-falls, stake-nets, and springes do not kill. If the savage captures an animal unhurt, and can make more by selling it alive than dead, he will doubtless do so. He is well fitted by education to keep a wild animal in captivity. His mode of pursuing game requires a more intimate knowledge of the habits of beasts than is ever acquired by sportsmen who use more perfect weapons. A savage is obliged to steal upon his game, and to watch like a jackall for the leavings of large beasts of prey. His own mode of life is akin to that of the creatures he hunts. Consequently, the savage is a good game-keeper: captured animals thrive in his charge, and he finds it remunerative to take them a long way to market. The demands of ancient Rome appear to have penetrated Northern Africa as far or further than the steps of our modern explorers. The chief centres of import of wild animals were Egypt, Assyria (and other eastern monarchies), Rome, Mexico, and Peru. I have not yet been able to learn what were the habits of Hindostan or China. The modern menagerie of Lucknow is the only considerable native effort in those parts with which I am acquainted.

*Egypt.*—The mutilated statistical tablet of Karnak (*Trans. R. Soc. Lit.*, 1847, p. 369, and 1863, p. 65) refers to an armed invasion of Armenia by Thothmes III, and the payment of a large tribute of antelopes and birds. When Ptolemy Philadelphus feted the Alexandrians (*Athenæus*, v), the Ethiopians brought dogs, buffaloes, bears, leopards, lynxes, a giraffe, and a rhinoceros. Doubtless this description of gifts was common. Live beasts are the one article of curiosity and amusement, that barbarians can offer to civilised nations.

*Assyria.*—Mr. Fox Talbot thus translates (*Journal Asiatic Soc.*, xix, 124) part of the inscription on the black obelisk of Ashurakbal found at Nineveh and now in the British Museum. "He caught in hunter's toils (a blank number) of armi, turakhi, nali, and yadi. Every one of these animals he placed in separate enclosures. He brought up their young ones and counted them as carefully as young lambs. As to the creatures called burkish,

utrati (dromedaries?), tishani, and dagari, he wrote for them and they came. The dromedaries he kept in enclosures, where he brought up their young ones. He entrusted each kind of animal to men of their own country to tend them. There were also curious animals of the Mediterranean Sea, which the King of Egypt sent as a gift and entrusted to the care of men of their own land. The very choicest animals were there in abundance, and birds of Heaven with beautiful wings. It was a splendid menagerie, and all the work of his own hands. The names of the animals were placed beside them."

*Rome.*—The extravagant demands for the amphitheatre of ancient Rome must have stimulated the capture of wild animals in Asia, Africa, and the then wild parts of Europe, to an extraordinary extent. I will quote one instance from Gibbon. "By the order of Probus, a vast quantity of large trees torn up by the roots were transplanted into the midst of the circus. The spacious and shady forest was immediately filled with a thousand ostriches, a thousand stags, a thousand fallow-deer, and a thousand wild boars, and all this variety of game was abandoned to the riotous impetuosity of the multitude. The tragedy of the succeeding day consisted in the massacre of a hundred lions, an equal number of lionesses, two hundred leopards, and three hundred bears." Further on, we read of a spectacle by the younger Gordian of "twenty zebras, ten elks, ten giraffes, thirty African hyenas, ten Indian tigers, a rhinoceros, an hippopotamus, and thirty-two elephants."

*Mexico.*—Gomara, the friend and executor of Herman Cortes, states, "There were here also many cages, made of stout beams, in some of which, there were lions (pumas); in others, tigers (jaguars); in others, ounces; in others, wolves; nor was there any animal on four legs, that was not there. They had for their rations, deer and other animals of the chase. There were also kept in large jars or tanks, snakes, alligators, and lizards. In another court, there were cages containing every kind of birds of prey, such as vultures, a dozen sorts of falcons and hawks, eagles, and owls. The large eagles received turkeys for their food. Our Spaniards were astonished at seeing such a diversity of birds and beasts; nor did they find it pleasant to hear the hissing of the poisonous snakes, the roaring of the lions, the shrill cries of the wolves, nor the groans of the other animals given to them for food."

*Peru.*—Garcilasso de la Vega (*Commentarios Reales*, v, 10), the son of a Spanish conqueror by an Indian princess, born and bred in Peru, writes, "All the strange birds and beasts which the chiefs presented to the Inca, were kept at court, both for grandeur and also to please the Indians who presented them. When

I came to Cuzcò, I remember there were some remains of places where they kept these creatures. One was the serpent conservatory, and another where they kept the pumas, jaguars, and bears."

*Syria and Greece.* I could have said something on Solomon's apes and peacocks, and could have quoted at length the magnificent order given by Alexander the Great (Pliny, *Nat. Hist.*, viii, 16) towards supplying material for Aristotle's studies in natural history; but enough has been said to prove what I maintained, namely, that numerous cases occur, year after year, and age after age, in which every animal of note is captured and its capabilities of domestication unconsciously tested.

I would accept in a more stringent sense than it was probably intended to bear, the text of St. James, who wrote at a time when a vast variety and multitude of animals were constantly being forwarded to Rome and to Antioch for amphitheatrical shows. He says (James iii, 3), "Every kind of beasts, and of birds, and of serpents, and of things in the sea, is tamed and has been tamed by mankind."

*Conditions of Domestication.*—I conclude from what I have stated that there is no animal worthy of domestication that has not frequently been captured, and might ages ago have established itself as a domestic breed, had it not been deficient in certain necessary particulars which I shall proceed to discuss. These are so numerous and so stringent as to leave no ground for wonder that out of the vast abundance of the animal creation, only a few varieties of a few species should have become the companions of man.

It by no means follows that because a savage cares to take home a young fawn to amuse himself, his family, and his friends, that he will always continue to feed or to look after it. Such attention would require a steadiness of purpose foreign to the ordinary character of a savage. But herein lie two shrewd tests of the eventual destiny of the animal as a domestic species.

*Hardiness.*—It must be able to shift for itself and to thrive, although it is neglected; since, if it wanted much care, it would never be worth its keep.

The hardiness of our domestic animals is shewn by the rapidity with which they establish themselves in new lands. The goats and hogs left on islands by the earlier navigators, thrived excellently on the whole. The horse has taken possession of the Pampas, and the sheep and ox of Australia. The dog is hardly repressible in the streets of an oriental town.

*Fondness for Man.*—Secondly, it must cling to man, notwithstanding occasional hard usage and frequent neglect. If the animal had no natural attachment to our species, it would fret itself

to death, or escape and revert to wildness. It is easy to find cases where the partial or total non-fulfilment of this condition is a corresponding obstacle to domestication. Some kinds of cattle are too precious to be discarded, but very troublesome to look after. Such are the reindeer to the Lapps. Mr. Campbell of Islay informs me that the tamest of certain herds of them, look as if they were wild: they have to be caught with a lasso to be milked. If they take fright, they are off to the hills; consequently the Lapps are forced to accommodate themselves to the habits of their beasts, and to follow them from snow to sea and from sea to snow at different seasons. The North American reindeer has never been domesticated, owing, I presume, to this cause. The Peruvian herdsmen would have had great trouble to endure had the llama and alpaca not existed, for their cogeners, the huanaçu, and the vicuña, are hardly to be domesticated.

Zebras, speaking broadly, are unmanageable. The Dutch Boers constantly endeavour to break them to harness, and though they occasionally succeed to a degree, the wild mulish nature of the animal is always breaking out, and liable to balk them.

It is certain that some animals have naturally a greater fondness for man than others; and as a proof of this, I will again quote Hearne about the moose, who are considered by him to be the easiest to tame and domesticate of any of the deer tribe. Formerly the closely allied European elks were domesticated in Sweden, and used to draw sledges, as they are now occasionally in Canada; but they have been obsolete for many years. Hearne says, "The young ones are so simple that I remember to have seen an Indian paddle his canoe up to one of them, and take it by the poll, without experiencing the least opposition, the poor harmless animal seeming at the same time as contented alongside the canoe as if swimming by the side of its dam, and looking up in our faces with the same fearless innocence that a house lamb would." On the other hand, a young bison will try to dash out its brains against the tree to which it is tied, in terror and hatred of its captors.

It is interesting to note the causes that conduce to a decided attachment of certain animals to man, or between one kind of animal and another. It is notorious that attachments and aversions exist in nature. Swallows, rooks, and storks frequent dwelling houses; ostriches and zebras herd together; so do bisons and elks. On the other hand, deer and sheep, which are both gregarious, and both eat the same food and graze within the same enclosure, avoid one another. The spotted Danish dog, the Spitz dog and the cat have all a strong attachment to horses, and horses seem pleased with their company; but dogs and cats are proverbially discordant. I presume that two species of animals do

not consider one another companionable, or clubable, unless their behaviour and their persons are reciprocally agreeable. A phlegmatic animal would be exceedingly disquieted by the close companionship of an excitable one. The movements of one beast may have a character that is displeasing to the eyes of another; his cries may sound discordant; his smell may be repulsive. Two herds of animals would hardly intermingle, unless their respective languages of action and of voice were mutually intelligible. The animal which above all others is a companion to man is the dog, and we observe how readily their proceedings are intelligible to each other. Every whine or bark of the dog, each of his fawning, savage, or timorous movements is the exact counterpart of what would have been the man's behaviour, had he felt similar emotions. As the man understands the thoughts of the dog, so the dog understands the thoughts of the man, by attending to his natural voice, his countenance, and his actions. A man irritates a dog by an ordinary laugh, he frightens him by an angry look, or he calms him by a kindly bearing; but he has less spontaneous hold over an ox or a sheep. He must study their ways and tutor his behaviour before he can either understand the feelings of those animals or make his own intelligible to them. He has no natural power at all over many other creatures. Who, for instance, ever succeeded in frowning away a musquito, or in pacifying an angry wasp by a smile?

*Desire of Comfort.*—There is a motive which strongly attaches certain animals to human habitations, even though they are unwelcome: it is a motive which few persons who have not had an opportunity of studying animals in savage lands, are likely to estimate at its true value. The life of all beasts in their wild state is an exceedingly anxious one. From my own recollection, I believe that every antelope in South Africa has to run for its life every one or two days upon an average, and that he starts or gallops under the influence of a false alarm many times in a day. Those who have crouched at night by the side of pools in the desert, in order to have a shot at the beasts that frequent them, see strange scenes of animal life; how the creatures gambol at one moment and fight at another; how a herd suddenly halts in strained attention, and then breaks into a maddened rush, as one of them becomes conscious of the stealthy movements or rank scent of a beast of prey. Now this hourly life and death excitement is a keen delight to most wild creatures, but must be peculiarly distracting to the comfort-loving temperament of others. The latter are alone suited to endure the crass habits and dull routine of domesticated life. Suppose that an animal which has been captured and half-tamed, received ill-usage from his captors, either as punishment or through mere brutality, and that he

rushed indignantly into the forest with his ribs aching from blows and stones. If a comfort-loving animal, he will probably be no gainer by the change, more serious alarms and no less ill-usage awaits him: he hears the roar of the wild beasts, and the head-long gallop of the frightened herds, and he finds the buttings and the kicks of other animals harder to endure than the blows from which he fled: he has peculiar disadvantages from being a stranger; the herds of his own species which he seeks for companionship constitute so many cliques, into which he can only find admission by more fighting with their strongest members than he has spirit to undergo. As a set-off against these miseries, the freedom of savage life has no charms for his temperament; so the end of it is, that with a heavy heart he turns back to the habitation he had quitted. When animals thoroughly enjoy the excitement of wild life, I presume, they cannot be domesticated, they could only be tamed, for they would never return from the joys of the wilderness after they had once tasted them through some accidental wandering.

Gallinas have so little care for comfort, or indeed for man, that they fall but a short way within the frontier of domestication. It is only in inclement seasons that they take contentedly to the poultry yards.

Elephants, from their size and power, are not dependent on man for protection; hence, those that have been reared from calves, and have never learnt to dread and obey the orders of a man, are peculiarly apt to revert to wildness if they once are allowed to wander and escape to the woods. I believe this tendency, together with the cost of maintenance and the comparative uselessness of the beasts, are among the chief causes why Africans never tame them now; though they have not wholly lost the practice of capturing them when full-grown, and of keeping them imprisoned for some days alive. Mr. Winwood Reade's recent account of captured elephants, seen by himself near Glass Town in Equatorial Western Africa, is very curious.

*Usefulness to Man.*—To proceed with the list of requirements which a captured animal must satisfy before it is possible he could be permanently domesticated: there is the very obvious condition that he should be useful to man; otherwise, in growing to maturity, and losing the pleasing youthful ways which had first attracted his captors and caused them to make a pet of him, he would be repelled. As an instance in point, I will mention seals. Many years ago, I used to visit Shetland, when those animals were still common, and I heard many stories of their being tamed: one will suffice:—A fisherman caught a young seal; it was very affectionate, and frequented his hut, fishing for itself in the sea. At length it grew self-willed and unwieldy; it used to push the

children and snap at strangers, and it was voted a nuisance, but the people could not bear to kill it on account of its human ways. One day the fisherman took it with him in his boat, and dropped it in a stormy sea, far from home; the stratagem was unsuccessful; in a day or two the well-known scuffling sound of the seal, as it floundered up to the hut, was again heard; the animal had found its way home. Some days after, the poor creature was shot by a sporting stranger, who saw it basking, and did not know it was tame. Now had the seal been a useful animal and not troublesome, the fisherman would doubtless have caught others, and set a watch over them to protect them; and then, if they bred freely and were easy to tend, it is likely enough he would have produced a domestic breed.

The utility of the animals as a store of future food, is undoubtedly the most durable reason for maintaining them; but I think it was probably not so early a motive as the chief's *pleasure in possessing* them. That was the feeling under which the menageries, described above, were established. Whatever the despot of savage tribes is pleased with, becomes invested with a sort of sacredness. His tame animals would be the care of all his people, who would become skilful herdsmen under the pressure of fear. It would be as much as their lives were worth if one of the creatures were injured through their neglect. I believe that the keeping of a herd of beasts, with the sole motive of using them as a reserve for food, or as a means of barter, is a late idea in the history of civilisation. It has now become established among the pastoral races of South Africa, owing to the traffickings of the cattle traders, but it was by no means prevalent in Damara-Land when I travelled there twelve years ago. I then was surprised to observe the considerations that induced the chiefs to take pleasure in their vast herds of cattle. They were valued for their stateliness and colour, far more than for their beef. They were as the deer of an English squire, or as the stud of a man who has many more horses than he can ride. An ox was almost a sacred beast in Damara-Land, not to be killed except on momentous occasions, and then as a sort of sacrificial feast, in which all bystanders shared. The payment of two oxen was hush money for the life of a man. I was considerably embarrassed by finding that I had the greatest trouble in buying oxen for my own use, with the ordinary articles of barter. The possessors would hardly part with them for any remuneration; they would never sell their handsomest beasts.

One of the ways in which the value of tamed beasts would be soon appreciated, would be that of giving milk to children. It is marvellous how soon goats find out children and tempt them to suckle. I have had the milk of my goats, when encamping for

the night in African travels, drained dry by small black children, who had not the strength to do more than crawl about, but nevertheless came to some secret understanding with the goats and fed themselves. The records of many nations have legends like that of Romulus and Remus, who are stated to have been suckled by wild beasts. These are surprisingly confirmed by Gen. Sleeman's narrative of six cases where children were nurtured for many years by wolves in Oude. (*Journey through Oude in 1849-50*, i, 206.)

*Breeding freely.*—Domestic animals must breed freely under confinement. This necessity limits very narrowly the number of species which might otherwise have been domesticated. It is one of the most important of all the conditions that have to be satisfied. The North American turkey, reared from the eggs of the wild bird, is stated to be unknown in the third generation, in captivity. Our turkey comes from Mexico, and was abundantly domesticated by the ancient Mexicans.

The Indians of the Upper Amazon took turtle and placed them in lagoons for use in seasons of scarcity. The Spaniards who first saw them, called these turtle "Indian cattle". They would certainly have become domesticated like cattle, if they had been able to breed in captivity.

*Easy to tend.*—They must be tended easily. When animals reared in the house are suffered to run about in the companionship of others like themselves, they naturally revert to much of their original wildness. It is therefore essential to domestication that they should possess some quality by which large numbers of them may be controlled by a few herdsmen. The instinct of gregariousness is such a quality. The herdsman of a vast troop of oxen grazing in a forest, if he sees one of them, knows pretty surely that they are all in reach. If they are frightened and gallop off, they do not scatter, but are manageable as a single body. When animals are not gregarious, they are to the herdsman like a falling necklace of beads whose string is broken, or as a handful of water escaping between the fingers.

The cat is the only non-gregarious domestic animal. It is retained by its extraordinary adhesion to the comforts of the house in which it is reared.

An animal may be perfectly fitted to be a domestic animal, and be peculiarly easy to tend in a general way, and yet the circumstances in which the savages are living may make it too troublesome for them to maintain a breed. The following account, taken from Mr. Scott Nind's paper on the Natives of King George's Sound, in Australia, and printed in the first volume of the *Journal of the Geographical Society*, is particularly to the point. He says: "In the chase the hunters are assisted by dogs, which they take when young

and domesticate; but they take little pains to train them to any particular mode of hunting. After finding a litter of young, the natives generally carry away one or two to rear; in this case, it often occurs that the mother will trace and attack them; and, being large and very strong, she is rather formidable. At some periods, food is so scanty as to compel the dog to leave his master and provide for himself; but in a few days he generally returns." I have also evidence that this custom is common to the wild natives of all parts of Australia.

The gregariousness of all our domestic species is, I think, the primary reason why some of them are extinct in a wild state. The wild herds would intermingle with the tame ones, some would become absorbed, the others would be killed by hunters, who used the tame cattle as a shelter to approach the wild. Besides this, comfort-loving animals would be less suited to fight the battle of life with the rest of the brute creation; and it is therefore to be expected that those varieties which are best fitted for domestication, would be the soonest extinguished in a wild state. For instance, we could hardly fancy the camel to endure in a land where there were large wild beasts.

*Recapitulation.*—I will shortly recapitulate what appear to be the conditions under which wild animals may become domesticated:—1, they should be hardy; 2, they should have an in-born liking for man; 3, they should be comfort-loving; 4, they should be found useful to the savages; 5, they should breed freely; 6, they should be gregarious.

I believe that nearly every animal has had its chance of being domesticated, and that almost all of those which fulfilled the above conditions, were domesticated long ago. It would follow as a corollary to this, that the animal creation possesses few, if any, more animals worthy of domestication, at least for such purposes as savages care for.

*Selection.*—The irreclaimably wild members of every flock would escape and be utterly lost; the wilder of those that remained would assuredly be selected for slaughter, whenever it was necessary that one of the flock should be killed. The tamest cattle—those that seldom ran away, that kept the flock together and led them homewards—would be preserved alive longer than any of the others. It is therefore these that chiefly become the parents of stock, and bequeath their domestic aptitudes to the future herd. I have constantly witnessed this process of selection among the pastoral savages of South Africa. I believe it to be a very important one, on account of its rigour and its regularity. It must have existed from the earliest times, and have been in continuous operation, generation after generation, down to the present day.



*Exceptions.*—I have already mentioned the African elephant, the North American reindeer, and the apparent, but not real, exception of the North American Turkey. To these must be added the South African eland, which inhabits an area occupied by those very races whom I have shown to be remarkable for the absence of the habit of keeping animals alive. It is not, however, proved as yet that the eland is truly domesticable. I should also mention the ducks and geese of North America, but I cannot consider them in the light of a very strong case, for a savage who constantly changes his home is not likely to carry aquatic birds along with him. Beyond these few, I know of no notable exceptions to my theory.

To conclude. I see no reason to suppose that the first domestication of any animal, except the elephant, implies a high civilisation among the people who established it. I cannot believe it to have been the result of a preconceived intention, followed by elaborate trials, to administer to the comfort of man. Neither can I think it arose from one successful effort made by an individual, who might thereby justly claim the title of benefactor to his race; but, on the contrary, that a vast number of half-unconscious attempts have been made throughout the course of ages, and that ultimately, by slow degrees, after many relapses, and continued selection, our several domestic breeds became firmly established.

XIII.—*On the Punishment of Crucifixion in China.* By JAMES JONES, Esq., Corresponding Member of the Ethnological Society at Amoy.

(Read January 12th, 1864.)

MR. JONES witnessed the execution at Amoy, on the 28th October. The victim was a well-known thief, whose principal offence was that of stealing young girls and selling them for prostitutes. On his trial before his judge he refused to criminate himself, although repeatedly scourged until his back was raw. If a female witness fails in giving satisfactory evidence in a court of justice, she is beaten with a leather strap across the mouth. His wife, desirous of sparing her husband, refused to give evidence, but after two or three applications of the strap her courage gave way. She confessed his guilt, at the same time admitting that two hundred dollars of the money so derived was hidden in the sea near the

beach. Officers were sent to search, and finding the dollars in the place indicated, the prisoner was sentenced to decapitation—deemed by the Chinese the most severe of punishments, because they imagine that if a man leaves this world *minus* any of his members, he appears in the same condition in the next. The culprit therefore prayed to be crucified instead of being beheaded. The cross was of the Latin form, the foot being inserted in a stout plank, and the criminal, standing on a board, had nails driven through his feet, his hands stretched and nailed to the cross-beam. His legs were fastened to the cross with an iron chain, and his arms bound with cords, and on the cord round his waist was inserted a piece of wood on which was written his name and offence; a similar piece on his right arm contained his sentence—namely, to remain on the cross day and night until he died; another on his left arm had the name of the judge, with his titles and offices. The criminal was nailed to the cross inside the Yamun in the presence of the magistrate, and then carried by four coolies to one of the principal thoroughfares leading from the city, where he was left during the day, but removed at night inside the prison for fear of his friends attempting to rescue him, and again carried forth at daylight in charge of two soldiers. He was crucified at noon on the Wednesday, and Mr. Jones conversed with him at five in the evening. He complained of pain in the chest and thirst. On Thursday he slept for some hours when the cross was laid down within the gaol compound. No one was allowed to supply him with food or drink, and during the day there was quite a fair in front of the cross, people being attracted from a distance, and the sweetmeat vendors driving a large trade. On Saturday he was still alive, when the Taotai was appealed to by a foreigner to put an end to the wretch's sufferings, and he immediately gave orders that vinegar should be administered, which he expected would produce immediate death; but the result was otherwise, and at sunset, when the cross was taken within the gaol, two soldiers with stout bamboos broke both his legs and then strangled him. Mr. Jones says that all the Chinese with whom he has conversed assert that crucifixion is a modern punishment; and looking at the similarity of passages in the execution with the narratives of the New Testament, he conceives the idea may have been introduced through the Jesuits.