to the members of the whole animal series, and consider the evidence derived from their affinities or classification, their geographical distribution and geological succession. It is only our natural prejudice, and that arrogance which made our forefathers declare that they were descended from demi-gods, which leads us to demur to this conclusion. But the time will before long come when it will be thought wonderful, that naturalists who were well acquainted with the comparative structure and development of man and other mammals, should have believed that each was the work of a separate act of creation.

Comparison of the Mental Powers of Man and the Lower Animals

We have seen in the last chapter that man bears in his bodily structure traces of his descent from some lower form; but it may be urged that, as man differs so greatly in his mental power from all other animals, there must be some error in this conclusion. No doubt the difference in this respect is enormous, even if we compare the mind of one of the lowest savages, who has no words to express any number higher than four, and who uses no abstract terms for the commonest objects or affections, with that of the most highly organised ape. The difference would, no doubt, still remain immense, even if one of the higher apes had been improved or bribed as much as a dog has been in comparison with its parent-form, the wild jackal. The Fuegians rank amongst the lowest barbarians; but I was continually struck with surprise how closely the three natives on board H.M.S. "Beagle," who had lived some years in England and could talk a little English, resembled us in disposition and in most of our mental faculties. The organic being excepting man had possessed any mental power, or if it had been of a wholly different nature from those of the lower animals, then we should never have been able to convince ourselves that
our high faculties had been gradually developed. But it can be clearly
shown that there is no fundamental difference of this kind. We must also
admit that there is a much wider interval in mental power between one of
the lowest fishes, as a lamprey or lancelet, and one of the higher apes, than
in less gradations.

Nor is the difference slight in moral disposition between a barbarian,
on the rocks for dropping a basket of sea-urchins, and a Newton or
Shakespeare. Differences of this kind between the highest man of the highest races and the lowest savages, are connected by
the finest gradations. Therefore it is possible that they might pass and be
developed into each other.

My object in this chapter is solely to show that there is no fundamental
difference between man and the higher mammals in their mental faculties.
Each division of the subject might have been extended into a separate
essay, but must here be treated briefly. As no classification of the mental
powers has been universally accepted, I shall arrange my remarks in the
order most convenient for my purpose; and will select those facts which
have most struck me, with the hope that they may produce some effect on
the reader.

With respect to animals very low in the scale, I shall have to give some
additional facts under Sexual Selection, shewing that their mental powers
are higher than might have been expected. The variability of the faculties
in the individuals of the same species is an important point for us, and
some few illustrations will here be given. But it would be superfluous to
enter into many details on this head, for I have found on frequent enquiry
that it is the unanimous opinion of all those who have long attended to ani-
mal of many kinds, including birds, that the individuals differ greatly in
every mental characteristic. In what manner the mental powers were first
developed in the lowest organisms, is as hopeless an enquiry as how life first
originated. These are problems for the distant future, if they are ever to be
solved by man.

As man possesses the same senses with the lower animals, his funda-
mental intuitions must be the same. Man has also some few instincts in
common, as that of self-preservation, sexual love, the love of the mother for
her newly-born offspring, the power possessed by the latter of sucking, and so
forth. But man, perhaps, has somewhat fewer instincts than those possessed
by the animals which come next to him in the series. The orang-outang,
Eastern islands, and the chimpanzee in Africa, build platforms on which
they sleep; and, as both species follow the same habit, it might be argued
that this was due to instinct, but we cannot feel sure that it is not the result
of both animals having similar wants and possessing similar powers of rea-
ning. These apes, as we may assume, avoid the many poisonous herbs of
the tropics, and man has no such knowledge; but as our domestic animals,
when taken to foreign lands and when first turned out in the spring, often
eat poisonous herbs, which they afterwards avoid, we cannot feel sure that
the apes do not learn from their own experience or from that of their par-
et seen what fruits to select. It is however certain, as we shall presently see, that
apes have an instinctive dread of serpents, and probably of other danger-
ous animals.

The feyness and the comparative simplicity of the instincts in the
higher animals are remarkable in contrast with those of the lower animals.
Cuvier maintained that instinct and intelligence stand in an inverse ratio to
each other; and some have thought that the intellectual faculties of the
higher animals have been gradually developed from their instincts. But
Bouchet, in an interesting essay, has shown that no such inverse ratio
really exists. Those insects which possess the most wonderful instincts are
reinly the most intelligent. In the vertebrate series, the least intelligent
members, namely fishes and amphibia, do not possess complex instincts;
and amongst mammals the animal most remarkable for its instincts, namely
the beaver, is highly intelligent, as will be admitted by every one who has
read Mr. Morgan's excellent account of this animal.

Although the first dawning of intelligence, according to Mr. Herbert
Spencer, have been developed through the multiplication and co-ordina-
tion of reflex actions, and although many of the simpler instincts gradu-
ate into actions of this kind and can hardly be distinguished from them, as in
the case of young animals sucking, yet the more complex instincts seem to
have originated independently of intelligence. I am, however, far from
wishing to deny that instinctive actions may lose their fixed and untaught
character, and be replaced by others performed by the will of the free will.
On the other hand, some intelligent actions—such as birds on oceanic
islands first learn to avoid man—after being performed during many gen-

erations, become converted into instincts and are inherited. They may then
be said to be degraded in character, for they are no longer performed
through reason or from experience. But the greater number of the more

complex instincts appear to have been gained in a wholly different manner,
through the natural selection of variations of simpler instinctive actions.

Such variations appear to arise from the same unknown causes acting on
the cerebral organisation, which induce slight variations or individual dif-
ferences in other parts of the body; and these variations, owing to our igno-
rance, are often said to arise spontaneously. We can, I think, come to no
surer conclusion with respect to the origin of the more complex instincts,
when we reflect on the marvellous instincts of sterile workerants and bees, which leave no offspring to inherit the effects of experience and of modified habits.

Although a high degree of intelligence is certainly compatible with the existence of complex instincts, as we see in the insects just named and in the beaver, it is not improbable that they may to a certain extent interfere with each other's development. Little is known about the functions of the brain, but we can perceive that as the intellectual powers become highly developed, the various parts of the brain must be connected by the most intricate channels of intercommunication; and as a consequence each separate part would perhaps tend to become less well fitted to answer in a definite and uniform, that is instinctive, manner to particular sensations or associations.

I have thought this digression worth giving, because we may easily underrate the mental powers of the higher animals, and especially of man, when we compare their actions founded on the memory of past events, on foresight, reason, and imagination, with exactly similar actions instinctively performed by the lower animals; in this latter case the capacity of performing such actions having been gained, step by step, through the variability of the mental organs and natural selection, without any conscious intelligence on the part of the animal during each successive generation. No doubt, as Mr. Wallace has argued, much of the intelligent work done by man is due to imitation and not to reason; but there is this great difference between his actions and many of those performed by the lower animals, namely, that man cannot, on his first trial, make, for instance, a stone hatchet or a canoe, through his power of imitation. He has to learn his work by practice, a beaver, on the other hand, can make its dam or canal, and a bird its nest as well, or nearly as well, the first time it tries, as when old and experienced.

To return to our immediate subject: the lower animals, like man, manifestly feel pleasure and pain, happiness and misery. Happiness is never better exhibited than by young animals, such as puppies, kittens, lambs, &c., when playing together, like our own children. Even insects play together, as has been described by that excellent observer, P. Huber, who saw ants chasing and pretending to bite each other, like so many puppies.

The fact that the lower animals are excited by the same emotions as ourselves is so well established, that it will not be necessary to weary the reader by many details. Terror acts in the same manner on them as on us, causing the muscles to tremble, the heart to palpitate, the splanchnics to be relaxed, and the hair to stand on end. Suspicion, the offspring of fear, is eminently characteristic of most wild animals. Courage and timidity are extremely variable qualities in the individuals of the same species, as plainly seen in our dogs. Some dogs and horses are ill-tempered and easily un sulky; others are good-tempered; and these qualities are certainly inherited. Every one knows how liable animals are to furious rage, and how plainly they show it. Many anecdotes, probably true, have been published in the long-delayed and arduous revenge of various animals. The accurate Krüger and Brehm have stated that the American and African monkeys which they kept tame, certainly revenged themselves. The love of a dog for his master is notorious; in the agony of death he has been known to caress his master, and every one has heard of the dog suffering under vivisection, who licked the hand of the operator; this man, unless he had a heart of stone, must have felt remorse to the last hour of his life. As Whewell has remarked, "who that reads the touching instances of maternal affection, remarked, "who that reads the touching instances of maternal affection, so often so of the women of all nations, and of the females of all animals, can doubt that the principle of action is the same in the two cases?"

We see maternal affection exhibited in the most trifling details, thus; Krüger observed an American monkey (a Cebus) carefully driving away the flies which plagued her infant; and Duvaucel saw a Hylobates washing the face of her young ones in a stream. So intense is the grief of female monkeys for the loss of their young, that it invariably caused the death of certain kinds kept under confinement by Brehm in N. Africa. Orphan monkeys were always adopted and carefully guarded by the other monkeys, both males and females. One female baboon had so capacious a heart that the not only adopted young monkeys of other species, but stole young dogs and cats, which she continually carried about. Her kindness, however, did not go so far as to share her food with her adopted offspring, at which Brehm was surprised, as his monkeys always divided everything quite fairly with their own young ones. An adopted kitten scratched the above-mentioned affectionate baboon, who certainly had a fine intellect, for she was much astonished at being scratched, and immediately examined the kitten's feet, and without more ado bit off the claws. In the Zoological Gardens, I heard from the keeper that an old baboon (C. chacana) had adopted a Rhesus monkey; but when a young drill and mandrill were placed in the cage, she seemed to perceive that these monkeys, though distinct species, were her nearer relatives, for she at once rejected the Rhesus and adopted both of them. The young Rhesus, as I saw, was greatly disinclined to being thus rejected, and it would, like a naughty child, annoy and attack the young drill and mandrill whenever it could do so with safety; this conduct exciting great indignation in the old baboon. Monkeys will also, according to Brehm, defend their master when attacked by anyone, as well as dogs to whom they are attached, from the attacks of other dogs. But we trench on the subject of sympathy, to which I shall recur. Some of their monkeys took much delight in teasing, in various ingenious ways, an old dog whom they disliked, as well as other animals.
Most of the more complex emotions are common to the higher animals and ourselves. Every one has seen how jealous a dog is of his master’s affection, if lavished on any other creature; and I have observed the same fact with monkeys. This shews that animals not only love, but have the desire to be loved. Animals manifestly feel emulation. They love approbation or praise; and a dog carrying a basket for his master exhibits in a high degree self-complacency or pride. There can, I think, be no doubt that a dog feels shame, as distinct from fear, and something very like modesty when begging too often for food. A great dog scorns the snarling of a little dog, and this may be called magnanimity. Several observers have stated that monkeys certainly dislike being laughed at; and they sometimes invent imaginary offences. In the Zoological Gardens I saw a baboon who always got into a furious rage when his keeper took out a letter or book and read it aloud to him; and his rage was so violent that, as I witnessed on one occasion, he bit his own leg till the blood flowed.

We will now turn to the more intellectual emotions and faculties, which are very important, as forming the basis for the development of the higher mental powers. Animals manifestly enjoy excitement and suffer from ennui, as may be seen with dogs, and, according to Renger, with monkeys. All animals feel wonder, and many exhibit curiosity. They sometimes suffer from this latter quality, as when the hunter plays antics and thus attracts them. I have witnessed this with deer, and so it is with the vory chamois, and with some kinds of wild-ducks. Brehm gives a curious account of the instinctive dread which his monkeys exhibited towards snakes; but their curiosity was so great that they could not desist from occasionally satiating their hunger in a most human fashion, by lifting up the lid of the box in which the snakes were kept. I was so much surprised at his account, that I took a stuffed and coiled-up snake into the monkey-house at the Zoological Gardens, and the excitement thus caused was one of the most curious spectacles which I ever beheld. Three species of Cercopithecus were the most alarmed; they dashed about their cages and uttered short signals of danger, which were understood by the other monkeys. A young monkey and one old animal baboon alone took no notice of the snake. I then placed the stuffed specimen on the ground in one of the larger compartments. After a time all the monkeys collected round it in a large circle, and staring intently, presented a most ludicrous appearance. They became extremely nervous; so that when a wooden ball, with which they were familiar as a playingthing, was accidentally moved in the straw, under which it was partially hidden, they all instantly started away. These monkeys behaved very differently when a dead fish, a monkey, and some other new objects were placed in their cages; for though frighted, they soon approached, handled and examined them. I placed a live snake in a paper bag, with the mouth loosely closed, in one of the larger compartments. One of the monkeys immediately approached, cautiously opened the bag a little, peeped in, and instantly dashed away. Then I witnessed what Brehm has described, for monkey after monkey, with head raised high and turned on one side, could not resist taking momentary peeps into the upright bag, at the dreadful object lying quiet at the bottom. It would almost appear as if monkeys had some notion of zoological affinities, for those kept by Brehm exhibited a strange, though mistaken, instinctive dread of innocent lizards and frogs. An orang, also, has been known to be much alarmed at the first sight of a turtle.53

The principle of imitation is strong in man, and especially in man in a barbarous state. Desor has remarked that no animal voluntarily imitates an action performed by man, until in the ascending scale we come to monkeys, which are well-known to be ridiculous mimers. Animals, however, sometimes imitate each other’s actions: thus two species of wolves, which had been reared by dogs, learned to bark, as does sometimes the jackal, but whether this can be called voluntary imitation is another question.

From one account which I have read, there is reason to believe that puppies nursed by cats sometimes learn to lick their feet and thus to clean their faces; it is at least certain, as I hear from a perfectly trustworthy friend, that some dogs behave in this manner. Birds imitate the songs of their parents, and sometimes those of other birds; and parrots are notorious imitators of any sound which they often hear.

Hardly any faculty is more important for the intellectual progress of man than the power of attention. Animals clearly manifest this power, as when a cat watches by a hole and prepares to spring on its prey. Wild animals sometimes become so absorbed when thus engaged, that they may be easily approached. Mr. Barlow has given me a curious proof how variable this faculty is in monkeys. A man who trains monkeys to act used to purchase common kinds from the Zoological Society at the price of five pounds for each; but he offered to give double the price, if he might keep three or four of them for a few days, in order to select one. When asked how he could possibly so soon learn whether a particular monkey would turn out a good actor, he answered that it all depended on their power of attention; when he was talking and explaining anything to a monkey, its attention was easily distracted, as by a fly on the wall or other trivial object, the attempt was hopeless. If he tried by punishment to make an inattentive monkey learned sulky. On the other hand, a monkey which carefully attended could always be trained.

It is almost superfluous to state that animals have excellent memories for places and times. A baboon at the Cape of Good Hope, as I have been told by Sir Andrew Smith, recognized him with joy after an absence of months. I had a dog who was savage and averse to all strangers, and I
purposely tried his memory after an absence of five years and two days. I went near the stable where he lived, and shouted to him in my old manner; he showed no joy, but instantly followed me out walking and obeyed me, exactly as if I had parted with him only half an hour before. A train of old associations, dormant during five years, had thus been instantaneously awakened in his mind. Even ants, as P. Huber has clearly shewn, recognised their fellow-ants belonging to the same community after a separation of four months. Animals can certainly by some means judge of the intervals of time between recurrent events.

The Imagination is one of the highest prerogatives of man. By this faculty he unites, independently of the will, former images and ideas, and thus creates brilliant and novel results. A poet, as Jean Paul Richter remarks, "who must reflect whether he shall make a character say yes or no—to the devil with him; he is only a stupid corpse." Dreaming gives us the best notion of this power; as Jean Paul again says, "The dream is an involuntary art of poetry." The value of the products of our imagination depends on course on the number, accuracy, and clearness of our impressions; on our judgment and taste in selecting or rejecting the involuntary combinations, and to a certain extent on our power of voluntarily combining them. As dogs, cats, horses, and probably all the higher animals, even birds, as is stated on good authority, have vivid dreams, and this is shewn by their movements and voice, we must admit that they possess some power of imagination.

Of all the faculties of the human mind, it will, I presume, be admitted that Reason stands at the summit. Few persons any longer dispute that animals possess some power of reasoning. Animals may constantly be seen to pause, deliberate, and resolve. It is a significant fact, that the more the habits of any particular animal are studied by a naturalist, the more he attributes to reason and the less to unlearned instincts. In future chapters, we shall see that some animals extremely low in the scale apparently display a certain amount of reason. No doubt it is often difficult to distinguish between the power of reason and that of instinct. Thus Dr. Hayes, in his work on 'The Open Polar Sea,' repeatedly remarks that his dogs, instead of continuing to draw the sledges in a compact body, diverged and separated when they came to thin ice, so that their weight might be more evenly distributed. This was often the first warning and notice which the traveller received that the ice was becoming thin and dangerous. Now, did the dogs act thus from the experience of each individual, or from the example of the older and wiser dogs, or from an inherited habit, that is from an instinct? This instinct might possibly have arisen since the time, long ago, when dogs were first employed by the natives in drawing their sledges; or the Arctic wolves, the parent-stock of the Esquimaux dog, may have acquired the instinct, impelling them not to attack their prey in a close pack when on thin ice. Questions of this kind are most difficult to answer.

So many facts have been recorded in various works shewing that animals possess some degree of reason, that I will here give only two or three instances, authenticated by Renger, and relating to American monkeys, which stand low in their order. He states that when he first gave eggs to his monkeys, they smashed them and thus lost much of their contents; afterwards they gently hit one end against some hard body, and picked off the bits of shell with their fingers. After cutting themselves only once with any sharp tool, they would not touch it again, or would handle it with the greatest care. Lumps of sugar were often given them wrapped up in paper; and Renger sometimes put a live wasp in the paper, so that in hasting unfolding it they got stung; after this had once happened, they always first held the packet to their ears to detect any movement within. Any one who is not convinced by such facts as these, and by what he may observe with his own dogs, that animals can reason, would not be convinced by anything that I could add. Nevertheless I will give one case with respect to dogs, as it rests on two distinct observers, and can hardly depend on the modification of any instinct.

Mr. Colquhoun winged two wild-ducks, which fell on the opposite side of a stream; his retriever tried to bring over both at once, but could not succeed; she then, though never before known to ruffle a feather, deliberately killed one, brought over the other, and returned for the dead bird. Col. Hutchinson relates that two partridges were shot at once, one being killed, the other wounded; the latter ran away, and was caught by the retriever, who, on her return came across the dead bird; "she stopped, evidently greatly puzzled, and after one or two trials, finding she could not take it up without permitting the escape of the winged bird, she considered a moment, then deliberately murdered it by giving it a severe crunch, and afterwards brought away both. This was the only known instance of her ever having wilfully injured any game." Here we have reason, though not quite perfect, for the retriever might have brought the wounded bird first, and then returned for the dead one, as in the case of the two wild-ducks.

The muleteers in S. America say, "I will not give you the mule whose step is easiest, but la mas racional,—the one that reasons best," and Humboldt says, "this popular expression, dictated by long experience, combats the system of animated machines, better perhaps than all the arguments of speculative philosophy."

Thus, I think, now been shewn that man and the higher animals, especially the Primates, have some few instincts in common. All have the same
senses, intuitions and sensations—similar passions, affections, and emotions, even the more complex ones; they feel wonder and curiosity; they possess the same faculties of imitation, attention, memory, imagination, and reason, though in very different degrees. Nevertheless many authors have insisted that man is separated through his mental faculties by an impassable barrier from all the lower animals. I formerly made a collection of above a score of such aphorisms, but they are not worth giving, as their wide difference and number prove the difficulty, if not the impossibility, of the attempt. It has been asserted that man alone is capable of progressive improvement; that he alone makes use of tools or fire, domesticates other animals, possesses property, or employs language; that no other animal is self-conscious, comprehends itself, has the power of abstraction, or possesses general ideas; that man alone has a sense of beauty, is liable to caprice, has the feeling of gratitude, mystery, &c.; believes in God, or is endowed with a conscience. I will hazard a few remarks on the more important and interesting of these points.

Archbishop Sumner formerly maintained that man alone is capable of progressive improvement. With animals, looking first to the individual, every one who has had any experience in setting traps knows that young animals can be caught much more easily than old ones; and they can be much more easily approached by an enemy. Even with respect to old animals, it is impossible to catch many in the same place and in the same kind of trap, or to destroy them by the same kind of poison; yet it is improbable that all should have partaken of the poison, and impossible that all should have been caught in the trap. They must learn caution by seeing their brethren caught or poisoned. In North America, where the fur-bearing animals have long been pursued, they exhibit, according to the unanimous testimony of all observers, an almost incredible amount of sagacity, caution, and cunning; but trapping has been there so long carried on that inheritance may have come into play.

If we look to successive generations, or to the race, there is no doubt that birds and other animals gradually both acquire and lose caution in relation to man or other enemies, and this caution is certainly in great part an inherited habit or instinct, but in part the result of individual experience. A good observer, Leidy, states that in districts where foxes are much hunted the young when they first leave their burrows are incontestably much more wary than the old ones in districts where they are not so much disturbed.

Our domestic dogs are descended from wolves and jackals, though they may not have gained in cunning, and may have lost in wary and suspicion, yet they have progressed in certain moral qualities, such as affection, trust-worthiness, temper, and probably in general intelligence. The commoner在家不and animals have also made progress; and it is the same with the wild.

out Europe, in parts of North America, New Zealand, and recently in Fortosa, as well as on the mainland of China. Mr. Swinhoe, who describes these latter cases, attributes the victory of the common rat over the large Mus musculus to its superior cunning; and this latter quality may be attributed to the habitual exercise of all its faculties in avoiding extinction by man, as well as to nearly all the less cunning or weak-minded rats having been successively destroyed by him. To maintain, independently of any direct evidence, that no animal during the course of ages has progressed in intellect or other mental faculties, is to beg the question of the evolution of species. Hereafter we shall see that, according to Lartet, existing mammals belonging to several orders have larger brains than their ancient tertiary prototypes.

It has often been said that no animal uses any tool; but the chimpanzee in a state of nature cracks a native fruit, somewhat like a walnut, with a stone. Renner easily taught an American monkey thus to break open hard palm-nuts, and afterwards of its own accord it used stones to open other kinds of nuts, as well as boxes. It thus also removed the soft rind of fruit that had a disagreeable flavour. Another monkey was taught to open the lid of a large box with a stick, and afterwards it used the stick as a lever to move heavy bodies; and I have myself seen a young orang put a stick into a crevice, slip his hand to the other end, and use it in the proper manner as a lever. In the cases just mentioned stones and sticks were employed as implements; but they are likewise used as weapons. Brehm states, on the testimony of the well-known traveller Schimper, that in Abyssinia when the baboons belonging to one species (C. galada) descend in troops from the mountains to plunder the fields, they sometimes encounter troops of another species (C. hamadryas), and then a fight ensues. The Galadas roll down great stones, which the Hamadryas try to avoid, and then both species, making a great uproar, rush furiously against each other. Brehm, when accompanying the Duke of Coburg-Gotha, aided in an attack with the arms on a troop of baboons in the pass of Mensa in Abyssinia. The baboons in return rolled so many stones down the mountain, some as large as a man's head, that the attackers had to beat a hasty retreat; and the pass was actually for a time closed against the caravan. It deserves notice that these baboons thus acted in concert. Mr. Wallace on three occasions saw male orangs, accompanied by their young, "breaking off branches and the great spiny fruit of the Durian tree, with every appearance of rage; causing such a shower of missiles as effectually kept us from approaching too near the tree."

In the Zoological Gardens a monkey which had weak teeth used to open nuts with a stone; and I was assured by the keepers that this animal afterwards attacked an oak tree which I could not let any other
monkey touch it. Here, then, we have the idea of property; but this idea is common to every dog with a bone, and to most or all birds with their nest.

The Duke of Argyll remarks, that the fashioning of an implement for a special purpose is absolutely peculiar to man; and he considers that this forms an immeasurable gulf between him and the brutes. It is no doubt a very important distinction, but there appears to me much truth in Sir J. Lubbock's suggestion, that when primeval man first used flintstones or any purpose, he would have accidentally splintered them, and would have used the sharp fragments. From this step it would be a small one intentionally break the flints, and not a very wide step to rudely fashion them. This latter advance, however, may have taken long ages, if we may judge by the immense interval of time which elapsed before the man of the neolithic period took to grinding and polishing their stone tools. In breaking the flints, as Sir J. Lubbock likewise remarks, sparks would have been emitted, and in grinding them heat would have been evolved: this gives two usual methods of obtaining fire may have originated. The nature of fire would have been known in the many volcanic regions where lava occasionally flows through forests. The anthropomorphous apes, guided probably by instinct, build for themselves temporary platforms, but as this instinct is largely controlled by reason, the simpler ones, such as building a platform, might readily pass into a voluntary and conscious act. The orang is known to cover itself at night with the leaves of the indanus; and Brehm states that one of his baboons used to protect itself from the heat of the sun by throwing a straw mat over its head. In these latter habits, we probably see the first steps towards some of the simpler arts, rude architecture and dress, as they arose amongst the early proto-nomians of man.

language.—This faculty has just been considered as one of the chief distinctions between man and the lower animals. But man, as a highly competent judge, Archbishop Whately remarks, "is not the only animal that can make use of language to express what is passing in his mind, and can understand, more or less, what is so expressed by another." In Paraguay the Cabars are when excited utter at least six distinct sounds, which excite in monkeys similar emotions. The movements of the features and gestures of monkeys are understood by us, and they partly understand ours, a snigger and others declare. It is a more remarkable fact that the dog, since domesticated, has learnt to bark in at least four or five distinct tones, though barking is a new art, no doubt the wild species, the parents of the, expressed their feelings by cries of various kinds. With the domesticated we have the bark of cagereness, as in the chase; that of anger, the yelp or howling bark of despair, as when shut up; that of joy, as when returning on a walk with his master; and the very distinct one of demand or supplication, as when wishing for a door or window to be opened.

Articulate language is, however, peculiar to man; but he uses in common with the lower animals inarticulate cries to express his meaning, aided by gestures and the movements of the muscles of the face. This especially holds good with the more simple and vivid feelings, which are but little connected with our higher intelligence. Our cries of pain, fear, surprise, anger, together with their appropriate actions, and the murmurs of a mother to her beloved child, are more expressive than any words. It is not the mere power of articulation that distinguishes man from other animals, for as every one knows, parrots can talk; but it is the large power of connecting definite sounds with definite ideas; and this obviously depends on the development of the mental faculties.

As Horne Tooke, one of the founders of the noble science of philology, observes, language is an art, like brewing or baking; but writing would have been a much more appropriate simile. It certainly is not a true instinct, as every language has to be learnt. It differs, however, widely from all ordinary arts, for man has an instinctive tendency to speak, as we see in the babble of our young children; whilst no child has an instinctive tendency to brew, bake, or write. Moreover, no philologist now supposes that any language has been deliberately invented; each has been slowly and unconsciously developed by many steps. The sounds uttered by birds offer in several respects the nearest analogy to language, for all the members of the same species utter the same instinctive cries expressive of their emotions; and all the kind that have the power of singing exert this power instinctively; but the actual song, and even the call-notes, are learnt from their parents or older parents. These sounds, as Daines Barrington has proved, "are no more innate than language is in man." The first attempts to sing "may be compared to the imperfect endeavour in a child to babble." The young child continues practising, or, as the bird-catchers say, recording, for ten or eleven months. Their first essays show hardly a rudiment of the future song; but as they grow older we can perceive what they are aiming at; and at last they are said "to sing their song round." Nestlings which have learnt the song of a distinct species, as with the canary-birds educated in the Tyrol, each and transmit their new song to their offspring. The slight natural differences of song in the same species inhabiting different districts may be directly compared, as Barrington remarks, "to provincial dialects;" and the songs of allied, though distinct species may be compared with the languages of distinct races of man. I have given the foregoing details to show that the instinctive tendency to acquire an art is not a peculiarity confined to man.

With respect to the origin of articulate language, after having read on
the one side the highly interesting works of Mr. Hensleigh Wedgwood, the
Rev. F. Farrar, and Prof. Schleicher,78 and the celebrated lectures of Prof.
Max Müller on the other side, I cannot doubt that language owes its origin
to the imitation and modification, aided by signs and gestures, of various
natural sounds, the voices of other animals, and man’s own instinctive cries.
When we treat of sexual selection we shall see that primeval man, or rather
some early progenitor of man, probably used his voice largely, as does one
of the gibbons-apes at the present day, in producing true musical cadences,
that is in singing; we may conclude from a widely-spread analogy, that this
power would have been especially exerted during the courtship of the
sexes, serving to express various emotions, as love, jealousy, triumph, and
serving as a challenge to their rivals. The imitation by articulate sounds of
musical cries might have given rise to words expressive of various complex
emotions. As bearing on the subject of imitation, the strong tendency in
our nearest allies, the monkeys, in microcephalous idiots,79 and in the bar-
barous races of mankind, to imitate whatever they hear deserves notice. As
monkeys certainly understand much that is said to them by man, and as in
a state of nature they utter signal-cries of danger to their fellows,80 it does
not appear altogether incredible, that some unusually wise ape-like animal
should have thought of imitating the growl of a beast of prey, so as to in-
dicate to his fellow monkeys the nature of the expected danger. And this
would have been a first step in the formation of a language.

As the voice was used more and more, the vocal organs would have
been strengthened and perfected through the principle of the inherited
effects of use; and this would have reacted on the power of speech. But the
relation between the continued use of language and the development of
the brain has no doubt been far more important. The mental powers in
some early progenitor of man must have been more highly developed than
in any existing ape, before even the most imperfect form of speech could
have come into use; but we may confidently believe that the continued use
and advancement of this power would have reacted on the mind by
enabling and encouraging it to carry on long trains of thought. A long and
complex train of thought can no more be carried on without the aid of
words, whether spoken or silent, than a long calculation without the use of
figures or algebra. It appears, also, that even ordinary trains of thought
almost require some form of language, for the dumb, deaf, and blind girl,
Laura Bridgman, was observed to use her fingers whilst dreaming.81 Never-
thess a long succession of vivid and connected ideas, may pass through the mind without the aid of any form of language, as we may infer
from the prolonged dreams of dogs. We have, also, seen that retriever dogs
are able to reason to a certain extent and this they manifestly do without
the aid of language. The intimate connection between the brain and the
now developed in us, and the faculty of speech, is well shown by those curious
cases of brain disease, in which speech is specially affected, as when the
power to remember substantives is lost, whilst other words can be correctly
used.82 There is no more improbability in the effects of the continued use
of the vocal and mental organs being inherited, than in the case of hand-
writing, which depends partly on the structure of the hand and partly on
the disposition of the mind; and hand-writing is certainly inherited.83

Why the organs now used for speech should have been originally per-
fected for this purpose, rather than any other organs, it is not difficult to
see. Ants have considerable powers of intercommunication by means of
their antennæ, as shown by Huber, who devotes a whole chapter to their
language. We might have used our fingers as efficient instruments, for a
person with practice can report to a deaf man every word of a speech rapidly
delivered at a public meeting; but the loss of our hands, whilst thus
employed, would have been a serious inconvenience. As all the higher
mammals possess vocal organs constructed on the same general plan with
cats, and which are used as a means of communication, it was obviously
probable, if the power of communication had to be improved, that these
cine organs would have been still further developed; and this has been
effectively accomplished by the aid of adjoining and well-adapted parts, namely the tongue
and lips.84 The fact of the higher apes not using their vocal organs for
speech, no doubt depends on their intelligence not having been suffi-
ciently advanced. The possession by them of organs, which with long-con-
tinued practice might have been used for speech, although not thus used,
is paralleled by the case of many birds which possess organs fitted for
singing, though they never sing. Thus, the nightingale and crow have vocal
organs similarly constructed, these being used by the former for diversifi-
ding, and by the latter merely for croaking.85

The formation of different languages and of distinct species, and the
persons that both have been developed through a gradual process, are curi-
ously the same.86 But we can trace the origin of many words further back
than in the case of species, for we can perceive that they have arisen from
imitation of various sounds, as in alliterative poetry. We find in distinct
languages striking homologies due to community of descent, and analogous
to a similar process of formation. The manner in which certain letters
sounds change when others change is very like correlated growth. We
see in both cases the reduplication of parts, the effects of long-continued
and so forth. The frequent presence of rudiments, both in languages
of species, is still more remarkable. The letter m in the word man, means
that in the expression I am, a superfluous and useless rudiment has
retained. In the spelling also of words, letters often remain as the
forms of ancient forms of pronunciation. Languages, like organic
beings, can be classed in groups under groups; and they can be classed either naturally according to descent, or artificially by other characters. Dominant languages and dialects spread widely and lead to the gradual extinction of other tongues. A language, like a species, when once extinct, never, as Sir C. Lyell remarks, reappears. The same language never has two birth-places. Distinct languages may be crossed or blended together. We see variability in every tongue, and new words are continually cropping up; but as there is a limit to the powers of the memory, single words, like whole languages, gradually become extinct. As Max Müller has well remarked:—"A struggle for life is constantly going on amongst the words and grammatical forms in each language. The better, the shorter, the easier forms are constantly gaining the upper hand, and they owe their success to their own inherent virtue." To these more important causes of the survival of certain words, mere novelty may. I think, be added; for there is in the mind of man a strong love for slight changes in all things. The survival or preservation of certain favoured words in the struggle for existence is natural selection.

The perfectly regular and wonderfully complex construction of the languages of many barbarous nations has often been advanced as a proof, either of the divine origin of these languages, or of the high art and former civilisation of their founders. Thus F. von Schlegel writes: "In those languages which appear to be at the lowest grade of intellectual culture, we frequently observe a very high and elaborate degree of art in their grammatical structure. This is especially the case with the Basque and the Lapponian, and many of the American languages." But it is assuredly an error to speak of any language as an art in the sense of its having been elaborately and methodically formed. Philologists now admit that conjunctions, declensions, &c., originally existed as distinct words, since joined together, and as such words express the most obvious relations between objects and persons, it is not surprising that they should have been used by the men of most races during the earliest ages. With respect to perfection, the following illustration will best show how easily we may err: a Conusoid sometimes consists of no less than 150,000 pieces of shell, all arranged with perfect symmetry in radiating lines, but a naturalist does not consider an animal of this kind as more perfect than a bilateral one with comparatively few parts and with none of these alike, excepting on the opposite sides of the body. He justly considers the differentiation and specialisation of organs as the test of perfection. So with languages, the most symmetrical and complex ought not to be ranked above irregular, abbreviated, and bastardised languages, which have borrowed expressive words and useful forms of construction from various conquering, or conquered, or immigrant races.

From these few and imperfect remarks I conclude that the extreme complexity and regular construction of many barbarous languages, is no proof that they owe their origin to a special act of creation. Nor, as we have seen, does the faculty of articulate speech in itself offer any insuperable objection to the belief that man has been developed from some lower form.

Self-consciousness, Individuality, Abstraction, General Ideas, &c.—It would be useless to attempt discussing these high faculties, which, according to several recent writers, make the sole and complete distinction between man and the brutes, for hardly two authors agree in their definitions. Such faculties could not have been fully developed in man until his mental powers had advanced to a high standard, and this implies the use of a perfect language. No one supposes that one of the lower animals reflects whence it comes or whither it goes,—what is death or what is life, and so forth. But can we feel sure that an old dog with an excellent memory and some of his noble qualities, but without consciousness of the past power of imagination, as shown by his dreams, never reflects on his past life, or that a degraded Australian savage, who uses hardly any abstract words and cannot count above four, ever feels self-consciousness, or reflects on the nature of his own existence.

That animals retain their mental individuality is unquestionable. When my voice awakened a train of old associations in the mind of the above-mentioned dog, he must have retained his mental individuality, although every atom of his brain had probably undergone change more than once during the interval of five years. This dog might have brought forward the argument lately advanced to crush all evolutionists, and said, "I abide amid all mental moods and all material changes. ... The teaching that atoms have their impressions as legacies to other atoms falling into the places they have vacated is contradictory of the utterance of consciousness, and is therefore false; but it is the teaching necessitated by evolutionism, consequently the hypothesis is a false one."

Sense of Beauty.—This sense has been declared to be peculiar to man. But when we behold male birds elaborately displaying their plumes and splendid colours before the females, whilst other birds not thus decorated make no such display, it is impossible to doubt that the females admire the beauty of their male partners. As women everywhere deck themselves with these plumage, the beauty of such ornaments cannot be disputed. The Bower-birds, by tastefully ornamenting their playing-passages with gaily-coloured objects, as do certain humming-birds their nests, offer additional evidence that they possess a sense of beauty. So with the song of birds, the sweet
strains poured forth by the males during the season of love are certainly admired by the females, of which fact evidence will hereafter be given. If female birds had been incapable of appreciating the beautiful colours, the ornaments, and voices of their male partners, all the labour and anxiety exhibited by them in displaying their charms before the females would have been thrown away; and this it is impossible to admit. Why certain bright colours and certain sounds should excite pleasure, when in harmony, cannot, I presume, be explained any more than why certain flavours and scents are agreeable; but assuredly the same colours and the same sounds are admired by us and by many of the lower animals.

The taste for the beautiful, at least as far as female beauty is concerned, is not of a special nature in the human mind; for it differs widely in the different races of man, as will hereafter be shown, and is not the same even in the different nations of the same race. Judging from the hideous ornaments and the equally hideous music admired by most savages, it might be urged that their aesthetic faculty was not so highly developed as in certain animals, for instance, in birds. Obviously no animal would be capable of admiring such scenes as the heavens at night, a beautiful landscape, or refined music; but such high tastes, depending as they do on culture and complex associations, are not enjoyed by barbarians or by uneducated persons.

Many of the faculties, which have been of inestimable service to man for his progressive advancement, such as the powers of the imagination, wonder, curiosity, an undefined sense of beauty, a tendency to imitation, and the love of excitement or novelty, could not fail to have led to the most capricious changes of customs and fashions. I have alluded to this point, because a recent writer has oddly fixed on Caprice “as one of the most remarkable and typical differences between savages and brutes.” But not only can we perceive how it is that man is capricious, but the lower animals are, as we shall hereafter see, capricious in their affections, aversions, and sense of beauty. There is also good reason to suspect that they love novelty for its own sake.

Belief in God.—Religion.—There is no evidence that man was aboriginally endowed with the ennobling belief in the existence of an Omnipotent God. On the contrary there is ample evidence, derived not from hasty travellers but from men who have long resided with savages, that numerous races have existed and still exist, who have no idea of one or more gods, and who have no words in their languages to express such an idea. The question is of course wholly distinct from that higher one, whether there exists a Creator and Ruler of the universe; and this has been answered in the affirmative by the highest intellects that have ever lived.

If, however, we include under the term “religion” the belief in unseen or spiritual agencies, the case is wholly different; for this belief seems to be almost universal with the less civilized races. Nor is it difficult to comprehend how it arose. As soon as the important faculties of the imagination, wonder, and curiosity, together with some power of reasoning, had become partially developed, man would naturally have craved to understand what was passing around him, and have vaguely speculated on his own existence. As Mr. M’Lennan has remarked, “Some explanation of the phenomena of life, a man must feign for himself; and to judge from the universality of it, the simplest hypothesis, and the first to occur to men, seems to have been that natural phenomena are attributable to the presence in animals, plants, and things, and in the forces of nature, of such spirits prompting to action as men are conscious they themselves possess.” It is probable, as Mr. Tylor has clearly shown, that dreams may have first given rise to the notion of spirits; for savages do not readily distinguish between subjective and objective impressions. When a savage dreams, the figures which appear before him are believed to have come from a distance and to stand over him; or “the soul of the dreamer goes out on its travels, and comes home with a remembrance of what it has seen.” But until the above-named faculties of imagination, curiosity, reason, &c., had been fairly well developed in the mind of man, his dreams would not have led him to believe in spirits, any more than in the case of a dog.

The tendency in savages to imagine that natural objects and agencies are animated by spiritual or living essences, is perhaps illustrated by a little fact which I once noticed: my dog, a full-grown and very sensible animal, was lying on the lawn during a hot and still day; but at a little distance a slight breeze occasionally moved an open parasol, which would have been wholly disregarded by the dog, had any one stood near it. As it was, every time that the parasol slightly moved, the dog growled fiercely and barked. He must, I think, have reasoned to himself in a rapid and unconscious manner, that movement without any apparent cause indicated the presence of some strange living agent, and no stranger had a right to be on his territory.

The belief in spiritual agencies would easily pass into the belief in the existence of one or more gods. For savages would naturally attribute to spirits the same passions, the same love of vengeance or simplest form of justice, and the same affections which they themselves experienced. The savages appear to be in this respect in an intermediate condition, for when the surgeon on board the “Beagle” shot some young ducklings as specimens, York Minster declared in the most solemn manner, “Oh! Mr. Bryne, much rain, much snow, blow much,” and this was evidently a retributive punishment for wasting human food. So again he related how, when a brother killed a “wild man,” storms long raged, much rain and snow fell.
Yet we could never discover that the Turbians believed in what we should call a God, or practised any religious rites; and Jeremy Button, with justifiable pride, stoutly maintained that there was no devil in his land. This latter assertion is the more remarkable, as with savages the belief in bad spirits is far more common than the belief in good spirits.

The feeling of religious devotion is a highly complex one, consisting of love, complete submission to an exalted and mysterious superior, a strong sense of dependence, fear, reverence, gratitude, hope for the future, and perhaps other emotions. No being could experience so complex an emotion until advanced in his intellectual and moral faculties to at least a moderately high level. Nevertheless we see some distant approach to this state of mind, in the deep love of a dog for his master, associated with complete submission, some fear, and perhaps other feelings. The behaviour of a dog when returning to his master after an absence, and, as I may add, of a monkey to his beloved keeper, is widely different from that towards their fellows. In the latter case the transports of joy appear to be somewhat less, and the sense of equality is shown in every action. Professor Braubach goes so far as to maintain that a dog looks on his master as on a god.

The same high mental faculties which first led man to believe in unseen spiritual agencies, then in fetishism, polytheism, and ultimately in monotheism, would infallibly lead him, as long as his reasoning powers remained poorly developed, to various strange superstitions and customs. Many of these are terrible to think of—such as the sacrifice of human beings to a blood-loving god; the trial of innocent persons by the ordeal of poison or fire; witchcraft, &c.—yet it is well occasionally to reflect on these superstitions, for they show us what an infinite debt of gratitude we owe to the improvement of our reason, to science, and our accumulated knowledge. As Sir J. Lubbock has well observed, "it is not too much to say that the horrible dread of unknown evil hangs like a thick cloud over savage life, and embitters every pleasure." These miserable and indirect consequences of our highest faculties may be compared with the incidental and occasional mistakes of the instincts of the lower animals.