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169

said that he saw the same cadgers come day after day. Again, it has been found that the popular character of this class of charities, and the facility with which the outward appearance of a public soup-kitchen can be simulated, has made this an easy mode of obtaining money under false pretences. The plan adopted is to issue sensational appeals, and to furnish food to such persons as may happen to come provided with subscribers' tickets, but the majority of those who subscribe do not trouble themselves to give tickets, and there is neither account nor audit of the balance. It is clear that under the present system there is great waste, and that one soup-kitchen can do the work which is now done by four or five. Count Rumford proposed, many years ago, what seems the proper mode of relief, the establishing of cooking depôts like those of Mr. Corbett at Glasgow, the success of which is so great that as much as 10,000L. the net profits, have entirely been devoted to charitable objects. It is to be regretted that the Working Men's Dinner Association, established to provide self-supporting kitchens, had not answered. As it is in St. George's-in-the-East 30,000 meals had been sold, and at Poplar as many as 6,000. It will astonish our readers to learn

The Amount of Relief Provided.

The last report of the Leicester-square Soup Kitchen, now moved to Ham-yard, Great Windmill-street, states that in 1868 258,019 meals were given away during the preceding twelve months. At the Model Soup Kitchen, in the Euston-road, 150,000 persons were relieved, and 600 more had plum-pudding, bread and tea distributed to them on Christmas-day. There is a Samaritan Fund for assisting existing soup-kitchens, &c., which has an establishment in the Moscow-road, Bayswater. In 1869 27,134 meals were given, consisting of bread, cheese, and soup, besides assistance in money and clothing to the most deserving by the Society for the Suppression of Mendicity. The Playhouse-yard Asylum distributed 134,162 rations of bread between the 1st of January and the 15th of April, 1869; the Metropolitan Free Dormitory Association professes to provide shelter and food nightly for 600 persons; while the Providence-row Night Refuge advertises that "from the commencement 180,000 nights' lodgings, with suppers and breakfasts, have been given to the honest and deserving poor without any distinction of religion, whilst at present the number is 1,800 a week." Last year the South London Night Refuge for houseless men and women received and fed with bread and coffee 35,198 persons. In St. Giles's, Mr. George Hatton, in connection with his Christian mission there, has gratuitously distributed 10,000 quarts of soup with bread. In Endell-street, St. Giles's, the Presbyterians have established a mission. At the Invalid Kitchen of the Bedford Institute, last year, 32,000 meat dinners with rice, 720 pints of beef-tea, and 620 pints of milk-arrowroot, have been given to the sick. And at the infant-school connected with the place from 60 to 120 little ones were fattened on soup and pudding. At the St. Andrew's Mission, Limehouse, 10,747 children's dinners were provided—8,961 breakfasts given. At the Golden-lane Mission and Ragged-school 24,000 meals were given during

the last three years. Close by the Rev. Reuben May conducts the Goswell-street Mission. Between October 1, 1869, and April, 1870, fifty-eight dining-rooms were opened for longer or shorter periods in the most impoverished districts of the metropolis by the Destitute Children's Society, and 147,858 dinners were supplied. The Ragged-schools, to the number of 200, do as much as they can in this way. In six only of the East London schools as many as 83,145 meals were given during the cold season. Last winter in Charles-street, Drury-lane, 6,000 quarts of soup were distributed and 2,300 dinners given. A most excellent institution, the St. Pancras Invalids' Dinner Table, in 1870 gave as many as 18,860 dinners to invalids, many of them the out-patients of University College Hospital. The price of the tickets is half the cost of the food. In Earl-street, Lisson-grove, there is another institution of the kind, in which last year 4,143 dinners were given. At both children as well as adults share in the benefits provided. Similar establishments on a smaller scale exist in Ebury-street, Salem-road, Bayswater. At St. Mary's Kitchen, Market-street, Edgware-road, no payments were required. In 1869 14,114 dinners were given to 1,146 persons. There is the children's dinner-table and soup-kitchen, at Paddington-street, Marylebone, and a Poplar invalids' and children's table, besides local soup-kitchens, and a novelty in the way of industrial kitchens, the objects of which are to instruct the girls of the national school in economical cookery, and to fit them for service, and to help the sick and distressed among the neighbouring poor by supplying them with well-cooked provisions at a cheap rate. It appears altogether there are eighty-six soup kitchens and dinner-tables at work, in addition to the operations of the Poor-law. Surely people ought not to die of starvation in the metropolis. Surely also there must be no little waste of charitable relief. Since writing the above we see a similar feeling expressed in other quarters. The Society for Organising Charitable Relief and Repressing Mendicity have sent a communication to the committee of the Houseless Poor Asylum earnestly requesting them to consider whether the present state of that institution is not calculated to increase the mass of pauperism and demoralisation in the metropolis by attracting to it persons of idle, mendicant habits, and encouraging them to continue that course of life; and whether, by furnishing them with lodging and food, without exacting any labour, it does not counteract the object which the Legislature has in view in providing for the better regulation of the casual wards.

THE DESCENT OF MAN.\*

We said that Mr. Darwin's argument in this book depends largely upon the proposition that there is no difference in kind, none except in degree, between the intelligence of man and that of the lower animals. He admits that the difference in intelligence 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. But he urges that between the naked savage who dashes his child on the rocks for dropping a basket of sea-urchins and a Howard

\* The Descent of Man, and Selection in Relation to Sex. By Charles Darwin, M.A., F.R.S., &c. Two Vols. Murray. 1871.

or Clarkson the interval is also immense, as likewise is that between a barbarian unacquainted with any abstract terms and a Newton or a Shakespeare. It is one of the most marked characteristics of Mr. Darwin that he never disguises the feebleness of any point in his reasoning if he feels it to be feeble. He honestly states facts which seem to tell against himself, and adds no special pleading with a view to prevent them from having their full effect upon the mind of the reader. Nay, we are disposed to grant that he does not press certain considerations which favour his general view so far as, with Mr. Wallace's help, he might have done. He brings forward quite calmly the old and common statement that, whereas man is continually improving and progressing, the beaver builds his dam as well at the first as at the twentieth attempt, and the bird that first prepares a nest for its young decks it with as much taste and lines it with as much care as the bird that has done so for many seasons. We are convinced that Mr. Wallace is right in affirming that young birds and young beavers learn their trades, and study in the school of experience. Doubtless they owe much to instinct, i.e., to inherited capacity; but our bird-nesting expeditions taught us long ago that some birds understood the arts of nest-building and nest-hiding better than others, and we believe education to play a part in the history of all the higher animals. A chaffinch's nest is one of the loveliest of things, but no two chaffinch nests are alike; and the blundering young chaffinch will build her nest in full view of the village boys, while the sage and matronly chaffinch sets it in the highest fork of the apple-tree, where no eye can distinguish it from the lichen of the boughs, and where it remains in tranquil seclusion till winter strips away the leaves, and the secret is revealed. Obviously, however, the effect of Mr. Darwin's guarded statements and of his contempt for special pleading is to enhance the value of those facts which he deems worthy of being chronicled. These volumes contain an immense number of interesting stories relating to the faculties and habits of animals. We shall quote a few samples, endeavouring to select those which may be regarded as having most force in relation to Mr. Darwin's general argument. Our sub-titles indicate the quality which the extract is intended to illustrate.

Wonder and Curiosity.

Animals manifestly enjoy excitement and suffer from ennui, as may be seen with dogs, and, according to Rengger, 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 wary chamois, and with some kind 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 horror 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 of the Zoological Gardens, and the excitement thus caused was one of the most curious spectacles that I ever beheld. Three species of Cercopithecus were the most alarmed; they dashed about their cages, and uttered sharp

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signal cries of danger, which were understood by the other monkeys. A few young monkeys and one old Anubis 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 plaything, was accidentally moved in the straw under which it was partly hidden, they all instantly started away. These monkeys behaved very differently when a dead fish, a mouse, and some other new objects were placed in their cages; for though at first frightened, they soon approached, handled, and examined them. I then 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.

#### Attention.

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. While animals sometimes become so absorbed when thus engaged, that they may be easily approached, Mr. Bartlett 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. If when he was talking and explaining anything to a monkey its attention was easily distracted, as by a fly on the wall, or other trifling object, the case was hopeless. If he tried by punishment to make an inattentive monkey act it turned sulky. On the other hand, a monkey which carefully attended to him could always be trained.

#### Memory.

It is almost superfluous to state that animals have excellent memories for persons and places. A baboon at the Cape of Good Hope, as I have been informed by Sir Andrew Smith, recognised him with joy after an absence of nine 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 shown, 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.

#### Reason.

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. 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 travellers 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 this 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 showing that animals possess some degree of reason, that I will here give only two or three instances, authenticated by Rengger, 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 Rengger sometimes put a live wasp in the paper, so that in hastily unfolding it they got stung; after this had once happened, they always first held the packet to their ears to detect any movement within. 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.

To such facts as these Mr. Darwin adds others, which, though of a more general nature, have not a less direct bearing on the argument. There are some monkeys which use stones to crack nuts, others which turn over stones to look for insects, and even combine their strength to raise stones too large for a single monkey, others which defend themselves by rolling stones down steep banks. Mr. Darwin believes that he once saw a monkey use a lever. These are certainly striking facts, and, when taken in connection with those previously cited, cannot fail to make an impression on the mind. But yet they seem to us not only to leave the gap between the animal and the man still unbridged,—for this is admitted by Mr. Darwin,—but to lend force to previous conceptions of the extent of that gap. That the body of man may have been created by God in the method of evolution from that of a lower animal they render conceivable or probable; but do they not make more conspicuous than before the need of a Divine impulse, a favouring Providence, in order that the highest ape might develop into a man? It is a most significant circumstance that no savage race of man is known to exist, or to have existed, in ignorance of the use of fire. Probably Mr. Darwin would not undertake to maintain that the most intelligent animal,—dog, elephant, or ape,—could, even by elabo-

rate human education, be taught to trim and look after a fire or to use it for the simplest purposes of cookery. To kindle fire, to preserve it from going out, to turn it to one or two of its thousand uses, implies many and connected acts of intelligence. We have to recollect that the ape which first dared to approach near enough to molten lava to examine and touch it—and this amount of curiosity is quite credible in such an animal—would run away howling when it burnt its paw. All we know of animal intelligence leads us to believe that this ape would not repeat the experiment. For the present we would be content to leave the argument here, challenging those who maintain that man has become what he is without Divine assistance, to explain the universal human use of fire, and the universal absence of that use on the part of animals.

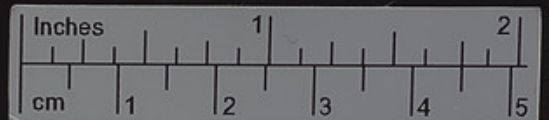
We stated formerly that Mr. Darwin disclaims the atheistic consequences which some draw from his system. In the following important passage he sums up, or partly sums up, the moral and religious bearing of his views.

#### Moral Aspects of the Theory.

The moral nature of man has reached the highest standard as yet attained, partly through the advancement of the reasoning powers, and, consequently, of a just public opinion, but especially through the sympathies being rendered more tender and widely diffused through the effects of habit, example, instruction, and reflection. It is not improbable that virtuous tendencies may, through long practice, be inherited. With the more civilised races the conviction of the existence of an all-seeing Deity has had a potent influence on the advancement of morality. Ultimately man no longer accepts the praise or blame of his fellows as his chief guide, though few escape this influence; but his habitual convictions controlled by reason afford him the safest rule. His conscience then becomes his supreme judge and monitor. Nevertheless, the first foundation or origin of the moral sense lies in the social instincts, including sympathy; and these instincts no doubt were primarily gained, as is the case of the lower animals, through natural selection.

The belief in God has often been advanced as not only the greatest, but the most complete of all the distinctions between man and the lower animals. It is, however, impossible, as we have seen, to maintain that this belief is innate or instinctive in man. On the other hand a belief in all-pervading spiritual agencies seems to be universal, and apparently follows from a considerable advance in the reasoning powers of man, and from a still greater advance in his faculties of imagination, curiosity, and wonder. I am aware that the assumed instinctive belief in God has been used by many persons as an argument for His existence. But this is a rash argument, as we should thus be compelled to believe in the existence of many cruel and malignant spirits, possessing only a little more power than man, for the belief in them is far more general than of a beneficent Deity. The idea of a universal and beneficent Creator of the universe does not seem to arise in the mind of man, until he has been elevated by long-continued culture.

He who believes in the advancement of man from some lowly organised form, will naturally ask how does this bear on the belief in the immortality of the soul. The barbarous races of man, as Sir J. Lubbock has shown, possess no clear belief of this kind; but arguments derived from the primeval beliefs of savages are, as we have just seen, of little or no avail. Few persons





feel any anxiety from the impossibility of determining at what precise period in the development of the individual, from the first trace of the minute germinal vesicle to the child either before or after birth, man becomes an immortal being; and there is no greater cause for anxiety because the period in the gradually ascending organic scale cannot possibly be determined.

I am aware that the conclusions arrived at in this work will be denounced by some as highly irreligious; but he who thus denounces them is bound to show why it is more irreligious to explain the origin of man as a distinct species by descent from some lower form, through the laws of variation and natural selection, than to explain the birth of the individual through the laws of ordinary reproduction. The birth both of the species and of the individual are equally parts of that grand sequence of events, which our minds refuse to accept as the result of blind chance. The understanding revolts at such a conclusion, whether or not we are able to believe that every slight variation of structure, the union of each pair in marriage, the dissemination of each seed, and other such events, have all been ordained for some special purpose.

Mr. Darwin attaches very great importance, in connection with the evolution of man, to what he calls sexual selection. By choosing and often by fighting for the most comely and intelligent women, savage tribes have, he thinks, greatly promoted their advance to higher conditions of life. On this large department of the subject we cannot enter, and, indeed, its discussion is not well fitted for the pages of widely-read periodicals; but we are strongly inclined to think that Mr. Darwin has fallen into the error into which those who have a pet idea are always liable to fall, namely, that of over-rating its importance. We cannot believe that sexual selection has effected so much as Mr. Darwin imputes to it.

We may interest our scientific readers by stating that Mr. Darwin, in endeavouring to trace the line of descent of the vertebrate animals, follows Professor Haeckel in regarding the lancelet or amphioxus as the probable link between the vertebrate and invertebrate kingdoms, and adopts Goodsir's daring and ingenious conjecture that the affinities of the lancelet conduct us to the Ascidians, which "hardly appear like animals, and consist of a simple, tough, leathery sack, with two small projecting orifices." According to these naturalists, there was, throughout this vast series, not one instance of "overleaping." The evolution took place by means of countless variations, each so minute as to be hardly observable. Of these variations, perhaps one in a thousand has been preserved, either in the existing creation or in the geological record, but every instance of variation was necessary. The mammal, according to Darwin, was produced by the bird, the bird by the reptile, the reptile by the amphibian, the amphibian by the fish. This order of succession was inflexibly necessary. But no words seem clear enough to explain this necessity, or what it implies, to persons unacquainted with the principles of biological succession; and some of our readers have imagined that, in saying that no Darwinian could believe in the possibility of a fish producing a bird, we denied that Mr. Darwin believes that birds are descended from fishes. Evolution involves infinite gradation, but no overleaping.

said that he saw the same vulgar scene day after day. Again, it has been found that the popular character of this class of charities, and the facility with which the outward appearance of a public-sympathizer can be simulated, has made this an easy mode of obtaining money under false pretences. The plan adopted is to issue occasional appeals, and to furnish food to such persons as may happen to come provided with subscribers' tickets, but the majority of those who contribute do not trouble themselves to give tickets, and there is neither account nor worth of the balance. It is clear that under the present system there is great waste, and that some sympathizers can do the work which is now done by four or five. Count Hamilton proposed, many years ago, what seems the proper mode of relief, the establishment of cooking depots like those of Mr. Corbett at Glasgow, the success of which is so great that as much as 10,000,000 of the poor have entirely been devoted to charitable objects. It is to be regretted that the Working Men's Dinner Association, established to provide anti-sophisticated kitchens, had not succeeded. As it is in St. George's-in-the-East 20,000 meals had been sold, and at Poplar as many as 6,000. It will certainly not remain to learn

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or *Chimpanzee* the interval is also immense, as likewise is that between a barbarous man acquainted with any abstract terms and a Newton or a Shakespeare. It is one of the most marked characteristics of Mr. Darwin that he never dignifies the foolishness of any point in his reasoning if he feels it to be foolish. He honestly states facts which seem to him against himself, and adds no special pleading with a view to prevent them from having their full effect upon the mind of the reader. Nay, we are disposed to grant that he does not press certain considerations which favour his general view so far as, with Mr. Wallace's help, he might have done. He brings forward quite calmly the old and common statement that, whereas man is continually improving and progressing, the lower brutes have done as well at the first as at the twentieth attempt, and the third that first prepares a nest for his young chicks it with as much taste and time it with as much care as the bird that has done so for many seasons. We are convinced that Mr. Wallace is right in asserting that young birds and young beavers learn their trade, and study in the school of experience. Doubtless they are much to instruct, i.e., in inherited capacity; but our bird-mongering appetites taught as long ago that some birds understood the art of nest-building and nest-hiding better than others, and we believe education to play a part in the history of all the higher animals. A chicken's nest is one of the loveliest of things, but so two chicken nests are alike; and the blundering young chicken with which her nest is full view of the village boys, while the sage and mature chicken sets it in the highest fork of the apple-tree, where no eye can distinguish it from the lichen of the boughs, and where it remains in tranquil seclusion till winter strips away the leaves, and the snow is revealed. Obviously, however, the effect of Mr. Darwin's guarded statements and of his contempt for special pleading is to enhance the value of those facts which he deems worthy of being discussed. These volumes contain an immense number of interesting stories relating to the faculties and habits of animals. We shall quote a few samples, endeavoring to select those which may be regarded as having most force in relation to Mr. Darwin's general argument. Our selections indicate the quality which the extract is intended to illustrate.

#### Wonder and Curiosity.

Animals manifestly enjoy excitement and suffer from monotony, as may be seen with dogs, and, according to Huxley, with monkeys. All animals feel wonder, and many exhibit curiosity. They sometimes suffer from this latter quality, as when the latter plays antics, and then attempts them. I have witnessed this with deer, and so it is with the very tamest, and with some kind of wild beasts. Brown gives a curious account of the instinctive dread which his monkeys exhibited towards snakes; but their curiosity was so great that they could not resist from occasionally satisfying their horror in a most human fashion—by lifting up the lid of the box in which the snakes were kept. I myself much surprised at his account, that I sent a staffed and rolled up snake into the monkey house of the Zoological Gardens, and the excitement thus caused was one of the most curious spectacles that I ever beheld. Three species of *Corynorhinus* were the most alarmed; they dashed about their cages, and uttered sharp

\* The Descent of Man, and Selection in Relation to Man, by Charles Darwin, M.A., F.R.S., &c. Two Vols. Murray, 1881.



light color of dog, which were indicated by the other monkeys. A few young monkeys and one old female sat on the ground to notice of the scene. I then placed the spotted monkey on the ground in one of the larger compartments. After a time all the monkeys collected round it in a large circle, and, starting forward, presented a most ludicrous appearance. They became extremely nervous, as if that when a wooden ball, with which they were familiar, was placed, was suddenly moved in the direction of which it was partly hidden, they all instinctively started up. These monkeys behaved very differently when a dead fish, a mouse, and some other new objects were placed in their cage; for, though at first bright-eyed, they soon approached, handled, and examined them. I then 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, took it out, and, in an instant, dashed away. This was what I thought he was afraid of, for monkey after monkey, with head raised high and, toward one side, could not resist taking extraordinary pains into the upright bag at the dreadful object lying quiet in the bottom. — It would almost appear as if monkeys had some notion of ecological relations, for those kept by Brehm exhibited a strange, though mistaken, instinctive dread of insects, lizards, and frogs. An angry snake, for both known to be much alarmed at the first sight of a toad.

#### Education.

Hardly any faculty is more important for the intellectual progress of man than the power of attention. Animals clearly manifest this power, as when it can watch for a hole and prepare to spring on the prey. While animals sometimes become so absorbed when thus engaged, that they may be easily approached, Mr. Hartwell has given me a curious proof from a monkey. This faculty is in monkeys, I am aware, that is, it is not in the same degree as in those which have not come to the same knowledge 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 attend on. What talent he will possibly be able to make whether a particular monkey would turn out a good actor, he answered that it is all dependent on their power of attention. If when he was talking and explaining anything to a monkey his attention was easily attracted, as by a fly on the wall, or other trifling object, this man was impatient. If he tried by patience to make an instructive monkey act, it turned away. On the other hand, a monkey which carefully attended to him would always be trained.

#### Memory.

It is almost superfluous to state that animals have excellent memories for persons and places. A baboon at the Cape of Good Hope, as I have been informed by Sir Andrew Smith, recognized his jail by after an absence of nine months. I had a dog who was strange and fierce to all strangers, and I purposely tried his memory after an absence of five years with two days. I would send the stable where he lived, and directed to him in my old manner. He showed no joy, but instantly followed his own master, and, after a short time, as if I had parted with him only last of four before. A lot of all unacquainted persons have, I am aware, had their dogs unexpectedly directed to his pad. Even after, as I noted his steady show, recognized their fellow-ants belonging to the same dominion after a separation of four months. Animals are certainly of some means judge of the intervals of time between recurrent events.

#### Instincts.

Few persons pay longer steps that animals possess more power of reasoning. Animals may constantly be seen to judge, deliberate, and resolve. It is significant that the most

deliberate of any particular animal are studied by a savannah, the savannah attributes to reason and the law to common instincts. No doubt it is often difficult to distinguish between the desire of reason and that of instinct. Thus Dr. Hagen, in his work on "The Open Polar Sea," repeatedly remarks that his dogs, instead of insisting to show the sledges in a straight line, they dragged and expected when they could not find this, so that their sledges might be more easily distributed. This was often the first warning and notice which the travellers 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 acted since the time, long ago, when dogs were first employed by the natives in drawing their sledges. In the Arctic wastes, the general stock of the dog was very much increased, and the instinct of finding their way to the sledges, which they play in a time past when on this line. Questions of this kind are most difficult to answer.

So many facts have been recorded in various works showing that animals possess some degree of reason, that I will here give only two or three instances, authenticated by Benger, and relating to American monkeys, which stand low in their order. He states that when he first gave eggs to his monkeys, they examined them and then ate each of their contents; afterwards they pulled them out and examined each body, and pulled of the skin of each with their teeth. After eating themselves only with one side of the head, they would turn round it again, or would handle it with the greatest care. Lumps of sugar were often given them wrapped up in paper, and Benger sometimes put a live way in the paper, or that it hardly subsiding in they got angry; after this had once happened, they always first held the paper in their nose to detect any movement within. 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; so then, though never before known to catch a duck, deliberately killed one, brought over the other, and returned for the dead bird.

To such facts as these Mr. Darwin adds others, which, though of a more general nature, have not a less direct bearing on the argument. There are some monkeys which are shown to count, others which have eyes open to look for insects, and even examine their strength to raise others to help for a single monkey, others which defend themselves by rolling stones down steep banks. Mr. Darwin believes that he once saw a monkey use a lever. These are certainly striking facts, and, when taken in connection with those previously cited, cannot fail to make an impression on the mind. But yet they seem to us not yet to leave the gap between the animal and the man still unbridged,—for this is admitted by Mr. Darwin,—but to lead back to previous conceptions of the extent of that gap. That the body of man may have been created by God in the method of evolution, from that of a lower animal they render conceivable or probable; but do they not make more conspicuous than before the need of a Divine impulse, a favoring Providence, in order that the highest ape might develop into a man? It is a most significant circumstance, that no savage race of man is known to exist, or to have existed, in ignorance of the use of fire. Probably Mr. Darwin would not undertake to maintain that the most intelligent animal,—dog, elephant, or ape,—could, even by abso-

late human education, be taught to write and look after a fire or use it for the simplest purposes of industry. To kindle fire, to preserve it from going out, to burn it to use or use it in thousands and, perhaps many and connected acts of intelligence. We have to conclude that the ape which that dared to approach near enough to notice him to examine and touch it—and this amount of curiosity is quite possible in such an animal—could run away howling when it burnt his paw. All we know of natural intelligence leads us to believe that this ape would not repeat the experiment. For the present we would be content to leave the argument here, challenging those who maintain that man has become what he is without Divine assistance, to explain the universal human use of fire, and the universal absence of that use on the part of animals.

We quoted formerly that Mr. Darwin declines the absolute omnipotence which some have been his system. In the following important passage he sums up, or partly sums up, the moral and religious bearing of his ideas.

#### Moral Aspect of the Theory.

The moral nature of man has excited the highest attention as yet attained, partly through the advancement of the reasoning powers, and transparency, of a just public opinion, but especially through the sympathetic feelings rendered more tender and widely diffused through the efforts of benevolent individuals, and of religious men. It is not probable that science, and reflection, in any conceivable direction, will be advanced, through long process, so advanced. With the more critical sense the conviction of the existence of an all-creating Deity has had a powerful influence on the advancement of society. Utimately man no longer accepts the prime or blame of his fellow as his chief guilt, though he accepts this influence; but his political conclusions are modified by reason after his chief rule. His conviction that becomes his conscience judges and modifies. Furthermore, the first foundation or origin of the moral sense lies in the social instincts, including sympathy, and these instincts are doubtless more strongly developed in the case of the lower animals, though natural selection.

The belief in God has often been attributed as not only the greatest, but the most complete of all the distinctions between man and the lower animals. It is, however, impossible, as we have seen, to maintain that this belief is innate or instinctive in man. On the other hand a belief in all-pervading spiritual agencies seems to be universal, and apparently follows from a considerable advance in the reasoning powers of man, and from a still greater advance in his faculties of imagination, curiosity, and wonder. I am aware that the argument is sometimes better in God has been used by many persons as an argument for the existence of God. This is a rash argument, as we should then be bound to believe in the existence of many good and malignant spirits, possessing only a little more power than man, for the belief in them is more general than that of a beneficent Deity. The idea of a universal and beneficent Creator of the universe does not seem to arise in the mind of man, until he has been elevated by long-continued culture.

He who believes in the advancement of man from some lowly organized form, will naturally ask how does this bear on the belief in the immortality of the soul. The barbarous race of man, as Mr. J. Lubbock has shown, possess no clear belief of this kind; but arguments derived from the physical habits of man, as we have seen, of little or no avail. Few persons



but any anxiety from the impossibility of determining at what precise period in the development of the individual, from the first trace of the incipient germinal vesicle to the child either before or after birth, man becomes an individual being; and there is no greater cause for anxiety because the period in the gradually ascending organic scale cannot possibly be determined.

I am aware that the conclusions arrived at in this work will be denounced by some as highly irreligious; but he who thus denounces them is bound to show why it is more irreligious to explain the origin of man as a distinct species by descent from some lower form, through the laws of variation and natural selection, than to explain the birth of the individual through the laws of ordinary reproduction. The birth both of the species and of the individual are equally parts of that grand sequence of events, which our attitude refuses to accept as the work of blind chance. The unreasoning results of such a conclusion, whether or not we are able to believe that every slight variation of structure, the union of such pairs in marriage, the dissemination of such seed, and other such events, have all been ordained for some special purpose.

Mr. Darwin attaches very great importance, in connection with the evolution of man, to what he calls sexual selection. By choosing and often by fighting for the most comely and intelligent women, savage tribes have, he thinks, greatly promoted their advance to higher conditions of life. On this large department of the subject we cannot enter, and, indeed, its discussion is not well fitted for the pages of widely-read periodicals, but we are strongly inclined to think that Mr. Darwin has fallen into the error into which those who have a pet idea are always liable to fall, namely, that of overrating its importance. We cannot believe that sexual selection has effected so much as Mr. Darwin implies to it.

We may interest our scientific readers by stating that Mr. Darwin, in endeavoring to trace the line of descent of the vertebrate animals, follows Professor Huxley in regarding the lancelet or amphioxus as the probable link between the vertebrate and invertebrate kingdoms, and adopts Huxley's daring and ingenious conjecture that the affinities of the lancelet conduct us to the *Ascidians*, which "hardly appear like animals, and consist of a simple, tough, leathery sack, with two small projecting orifices." According to these naturalists, there was, throughout this vast series, not one instance of "overlapping." The evolution took place by means of constant variations, such as minute as to be hardly observable. Of these variations, perhaps one in a thousand has been preserved, either in the existing creation or in the geological record, but every instance of variation was necessary. The mammal, according to Darwin, was produced by the bird, the bird by the reptile, the reptile by the amphibian, the amphibian by the fish. This order of succession was infinitely necessary. But no words seem clear enough to explain this necessity, or what it implies, to persons unacquainted with the principles of biological succession; and even if our readers have imagined that, in saying that no Darwinian could believe in the possibility of a fish producing a bird, we denied that Mr. Darwin believes that birds are descended from fishes. Evolution involves infinite gradation, but no overlapping.