Animal Psychology

The endowments of animals have, in all ages of the world, excited discussion; but this discussion has neither inaugurated a science, nor offered any exposition of the intellectual life of animals the lower orders of animals, in the least degree satisfactory. There are difficulties however; one of which, and a very serious one, is the want of a sufficient knowledge of their habits; another may be found in the abysmal nature of all intellectual science; but a greater than either arises from that stupendous blunder {as well as} and subtle fraud upon the animal races, the {introduction} mention of the term “instinct.” We have here a system of philosophy in a definition; {we have} an installation of the supernatural in the place of the rational, which silences at once all inquiry into the facts. If it be true that the acts of animals are the result of an inward persuasion, or a spontaneous impulse beyond their control; or the {deed} work {act} of an agent which performs ignorantly and blindly a work of intelligence and knowledge then the term instinct {(disposes of the whole subject)} (will answer all the ends it was designed to subserve); but on the contrary if these acts are the direct result of perception, reflection and volition, then the definition is absurd, and the question subject is open like any other to inquiry into the facts.

It would seem to require no argument to prove, that all animals are endowed with a principle which performs the same office in governing their conduct, {that} which the human mind does in regulating {the} man’s conduct of man {yet instinctists must deny this}. But we shall only /venture to/ [lightly crossed out] assume that man is endowed with a {certain} principle, which is distinct from the body, to which all of his acts are referable as a cause or motive power, except such as are {strictly} involuntary. We shall also assume that all animals below man are endowed with a certain principle, which is distinct from the body, to which their acts are referable as a cause or motive power, except such as are strictly involuntary.
Of the essence or ultimate nature of this principle we know nothing; neither do we know any thing of the ultimate nature of mind; but we do know that the human mind manifests certain powers as memory, certain passions as anger, certain appetites as hunger, and the true question is, {first} whether the corresponding principle in animals manifests certain powers as memory, certain passions as anger, and certain appetites as hunger; and if it does, {secondly} whether these powers, appetites and passions in the abstract and the concrete, in /particulars and in general/ [lightly crossed out and above in pencil: “analysis and synthesis”], are essentially similar manifestations; and if differences are detected, are they of kind or only of degree.

It is complacently said that the Mutae have the appetites and passions in common with man, but that the moral and intellectual endowments of the latter separate him by a broad distinction from the residue of the animal kingdom. This is true as a general proposition for the difference in degree is [insert mark but no insertion] immense; but its truth is denied if the distinction is intended to be fundamental. The passion of anger can only be predicated upon a thinking principle, and is a manifestation of that principle as absolutely as memory or imagination. It is an axiom in moral as well as in intellectual science that all pain and pleasure are in the mind, and not in the organs of the body. When therefore we find throughout animated nature that the phenomena of pleasure and pain are {every where present and} essentially the same, the universal presence of a thinking conscious principle becomes demonstrated.

Without entering any further into preliminary considerations I shall submit at the outset, in a series of propositions, the conclusions arrived drawn from an examination of this subject. They are the following:
I. That all animals the Mutae are endowed with a principle which performs for them the same office that the human mind does for man.

II. That the attributes and inferentially the ultimate nature of this principle is the same in the Mutae as in man; whether we consider its modes of operation, or these qualities which are common to both, or those differences which distinguish the species.

III. That it is bestowed in different degrees upon the several species in conformity with their structural organization; the endowments of each being admeasured and adapted to the sphere of existence prescribed by their physical powers.

IV. That there is a scale of mind from the human, down to that of the lowest animal; admitting of a diversity of powers but precluding a difference in the substance from which they emenate.

V. That the archetypal mind animal mind cannot be deduced from the human alone; it embraced the collective endowments of every species; and therefore a full comprehension of this principle involves a consideration of its manifestations throughout the animal kingdom.

VI. That the same arguments from nature which prove the indestructibility and consequent immortality of the human mind demonstrate also the indestructibility, and consequent immortality of the endowments of the Mutae.
As it will be impossible in this paper to do much more than touch the skirts of this great subject I shall confine myself to the presentation of a few distinct arguments, and

First,

The argument from analogy of structure

Zoology has demonstrated that the structural organization of all animals {in each of the four primary divisions} is in conformity with one general plan. That some of the features of this plan are developed in every species but the whole of them in none. Out of this diversity of organic forms there arises a series from the lowest and most simple in structure, to the highest and most complex; all united together, not by the chain of successive derivation, but {as} the parts of one harmonious system of animal life. Thus we are not permitted to lose sight of the fact, that man is a member of the animal kingdom, by the divine favor endowed with the highest capacities, and consequently invested [?] with the highest structure; but not thusly loosened from the bond which unites the animal kingdom together.

It is an interesting fact in this connection, that one of the most conspicuous features of this plan, namely the organ of vision, is, with a few exceptions, universally bestowed. From the single moveable eye of the higher animals, to the compound and immoveable eye of the insect tribes, the organism and functions of the eye are essentially similar.* The location of the eye, the taste

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*Footnote added by Morgan:* Of all the senses that of sight seems to be the most perfect in insects. The organ is compound, or in other words consists of many eyes compacted together, each of which is perfect in itself, being furnished with the proper humors and lenses essential to the exercise of vision + + Their number is almost incredibly great in some species. They vary in this respect from 50 in the ant, to 25,000 in a species of Mordella.” + + The common house fly has 4000, the dragon fly 12,554, the butterfly 17,000.

the smell, and the auditory apparatus in all animals who possess them, in the immediate vicinity of a brain common to all alike, is another structural fact, bearing testimony to a common plan, and a similar end for which they {these organisms} were designed; namely, that all these animals alike were thusly endowed, and intended to be endowed, with that great and ever marvelous power of perception, which is the primary instrument of all knowledge.

It is by the corporeal senses {exclusively} that the thinking principle obtains a knowledge of the external world. They are not only the inlets and the instruments of all objective knowledge, to all the members of the animal kingdom from the greatest to the least; but they are skilfully adapted to this end and are manifestly created for this purpose. Without some of these senses, the continuance, if not the existance of animal life would be impossible, for they are a condition of life. That the higher animals are endowed with all the senses is not questioned; nor can we detect the slightest difference between {the senses} of man, and of the inferior animals, except in the degree of acuteness, and {in the measure of} strength. The human race undoubtedly have the farthest most uniform developement of all the senses as a whole; but the highest perfection of particular senses is to be found among the inferior animals. As these senses, however, are mere vehicles of images, impressions or sensations they {logically} presuppose the presence {existence} of an intelligent principle to take cognizance of the impressions thus conveyed. Any other induction from the facts would deny and defeat the manifest object for which the senses were created.

It is quite instructive to notice how widely these senses are distributed. In the vertebrata the five senses are uniformly present, except in some few species in which the organ of vision is obliterated.
In the Mollusca, the only organs observable are those of touch and sight. In some of the species the latter sense is wanting. Cuvier says that no particular organ of smell has ever been detected in them, although they enjoy this sense (Cuvier, An. King., p. [blank]). Among the Articulata there is more diversity. Insects have the senses of sight, touch and smell in great perfection. There are some evidences according to Emmons (Nat. Hist. NY Ag. 5, 21) that they have the sense of hearing; but there are no facts independent of analogy, to prove the existence of the sense of taste. The remaining classes of this division have a less number distinctly manifested. In the Radiata the only sense of which there are certain evidences is that of touch.

But it is in the vertebrated animals, and especially in the class of mammals, that the analogies of structure are {most} marked and decisive. The nervous system is centralized in a brain, and from thence is distributed throughout the body; the relative position, and functions of the several parts being similar, if not precisely the same in the several species. I doubt not the anatomists could lay out before {you} the nervous system of a lion, a dog and a man, and could tell you that as a piece of animal mechanism each was constructed on precisely the same principles. That the nerves of sensation and motion, were distributed in the same manner and worked in the same way; that the several ganglia were distributed in the same manner, found in the same connections, and held the same relative position to the brain {and to the nerves of sensation and motion} /in each of them/ [lightly crossed through]. That the differences were precisely such as would adapt each one to the sphere of life prescribed by the law of his structure; differences in combination, but using the same elements and the same principles in each. Again the circulating system is organized not only upon the same general plan, but the organs employed, with some differences in structure,
are the same. So also the digestive apparatus, and the organs of respiration. To trace out this conformity of structure into minute details would be quite easy to the anatomists. Modifications of organs would no doubt be found, rendered necessary by the different kinds of food, and the greater or less degree of motions natural to each animal. For example, the organs of respiration, it is well known, are varied among the vertebrata. Birds require the largest quantity of respiration to give to their muscles the strength, and to their bodies the lightness necessary to flight; hence they have not only a double circulation, and an aerial respiration, but they also respire by other cavities besides the lungs. In most quadrupeds, the quality of respiration is moderate because they are formed rather to walk, than to run; but in reptiles who are formed to creep or hop, it is lower still; while in fishes it is the least, for the reason that they are suspended in a medium of nearly their own specific gravity, and require but little muscular strength for motion. Now the structure of the higher animals at least, leads decisively to the inference, that each of these organic forms was designed to be actuated and governed by an intelligent principle; a principle not only capable of using the perceptive organs bestowed, but also of making a rational use of the knowledge which these organs were framed to throw perpetually under its cognizance. To deny the existence of the principle is to deny the obvious purpose of this elaborate animal mechanism; it is to close the eyes to an induction both manifest and inevitable. If the existence of the principle, then, is conceded, it must be a thinking reflecting principle; for nothing below it, would make perception of the least utility. If the preceding reasoning be legitimate it follows also that a thinking [p. 7]
principle is inseparable from animal life, no matter how low in the scale of structure it may be found.

There is something in the principle of life which transcends all inquiry. A formative power, it builds up the infantile body into maturity and strength, and maintains a perpetual conflict with the elements of decay inherent in the body. Death is not the destruction of this principle, but simply its expulsion from the body by the breaking up of the organism through which it manifested itself. There is not a reason nor a fact which teaches the annihilation of this principle; neither is there a reason or a fact, with which I am acquainted, which demonstrates or can demonstrate that the living and the thinking principles are separate and distinct principles from each other. “Life is a vortex,” according to Cuvier (Cuv. An. King. 14) “more or less rapid, more or less complicated, the direction of which is invariable, and which carries along molecules of similar kinds, but into which individual molecules are continuously entering, and from which they are continuously departing; so that the form [Cuvier’s emphasis] of a living body is more essential to it than its matter. As long as this motion subsists, the body in which this motion takes place is living. When it finally ceases, it dies.” So in strict analogy is the life of the mind a vortex, into which images and ideas are continuously entering, and from which they are constantly vanishing. {{The perpetual flow of the mind suggests the idea of a revolution of some kind; and rather around a shifting center than upon a permanent axis.}}

An argument from analogy standing alone, is rarely conclusive, for induction commences where analogy ceases; but when it is corroborated by similar conclusions drawn from other, and independent premises, it becomes very convincing. Induction roots itself in just such analogies as we have been discussing.
II. The Argument from Memory

This faculty has been well termed by some writers the “great organ of the mind,” yet the term is used in a figurative sense. As we cannot resolve the intellectual powers into distinct faculties, it will be sufficient to assume that the mind is a something distinct from the body; a principle or essence not divisible into parts, or faculties or organs. “The utmost ingenuity has not been able to advance a step beyond the fact, that the mind remembers, reasons, imagines; and there we must rest contented.”

That the great majority of the Mutae remember; and that they can do it as really and as absolutely as man, cannot for a moment be doubted. It would insult the intelligence of those before me should I attempt to prove this fact, or to show that not the slightest difference could be detected between the memory of a man, and of a dog, in a given case. That the evidences of this memory remembrance were equally quick, equally manifest, and equally absolute. Yet this memory on the part of the inferior animal, cannot be an inward persuasion, or a spontaneous impulse, or the work of the supernatural gift of instinct. It must be conceded to be an act of the animal mind, recalling a former perception, treasured in that mind perhaps for years. Its quickness or slowness, its retentiveness or weakness are entirely immaterial. The question is do they remember, and with that great fact established, it will not prove a difficult task to show that the Mutae can dispense with that gift, not of the Deity, but of wise and thoughtful man, commonly known as instinct. [“instinct” is written in a large and heavy hand]

We are not called upon simply to admit that the

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1 Footnote added in pencil: Abercrombie.
Mutae remember. We witness that fact daily as a distinct and positive act of the animal mind, leaving no room for doubt or hesitation. But as this memory manifests itself in all respects in the same manner as the memory of the human mind, it must necessarily be referred to a principle distinct from the body, and analogous to the human mind. Memory is one of the qualities by which we establish the existence in man of a principle which we call mind; but we know nothing of its essence. By the same quality the existence of a corresponding principle in the Mutae is proved; but we know no more of its essence. If then we compare the two phenomena acts of remembrance, and find them precisely similar in their essential features, the inference that the principles from which they proceeded, were the same {in kind} would become inevitable. It is true that the thought is perpetually recurring, how vast the difference between a simple memory of familiar facts, objects, or even the remembrance of a series of antecedent facts, and that noble and cultivated memory of the human mind, which can not only untreasure the facts of universal knowledge, but also reproduce these processes of reasoning by which the great truths of science and philosophy have been demonstrated. All very true, the difference is immense; but it is a difference in degree, and not in kind. {Sir Wm. Hamilton has given us a definition of memory which is perhaps the best yet furnished, and it defines the memory of a lion as accurately as that of a man. “Memory,” he says, “is an immediate knowledge of a present thought involving an absolute belief that this thought represents another act of knowledge that has been (Ham. P.L. 138)”}

If then we endow a lion with a principle capable of remembering, we give to him a something, which is immaterial, and distinct from the body; and which inevitably is a principle of intelligence. and therefore indestructible. The demonstration of The concession of the power to remember, to a lion as it seems to me, carries the main question. The mind, as before remarked, is not a conglomerate of constituent parts; but an essence, not
resolvable into parts; therefore the whole mind remembers, and not a particular fraction of it. From its very nature memory is an omnipresent quality in every mental process. It is present in reason, in imagination, in abstraction. Strike out of the mind its power to remember, if such a thing were conceivable, and it would become entirely powerless, if not overthrown. The past utterly lost, the present vanishing with every instant, the future inconceivable for the want of a past, speech impossible, reflection unknown, and the external world a blanc. But on the other hand give to any created being, in addition to the senses, a principle capable of remembering, and it has at once something more than the power to remember; it has a power to know, and to understand and to reason; in fact an intelligent principle, a thinking power; and this is precisely what we understand the human mind to be. It is a maxim of philosophy “that a plurality of principles is not to be assumed, when the phenomena can possibly be explained by one” (Hamilton, P.L. P. 40) and. The maxim applies with force in the present case. It is only necessary to state it.

The argument from memory grows in strength and decisiveness when we reflect upon the intimate connection between the exercise of this power, and every act of every living creature. Whether we seek for its manifestation in the daily toil of the bee or the ant; in the mechanical skill of the beaver; in the predatory habits and stratagems of the Carnivora; in the watchful and affectionate care of offspring. Whether it ceases with the careful deposite of the egg as in most of the insect families, or is carried through the period of infancy, as among the higher animals; in the migrations of the feathered tribes; or in the daily
Lewis Henry Morgan: “Animal Psychology” (1857)

11½ round of all animal life in providing for the ever recurring wants of nature. In all these respects, and in others infinitely numerous, the absolute necessity of memory, is self evident; and its actual possession is demonstrated by a body of facts altogether final and conclusive.

Now we know of no principle except mind, on which memory can be predicated; and we have no facts on which to assume the existence of two principles, one of which remembers, and the other {one of which} reasons. The mind is a unit, and the same course of argument which proves that a principle capable of reason or judgement is mind, also must also be used to prove that the principle which remembers is mind. If this be logical, then it follows, that the thinking principle is the same throughout the realm of animated nature; {but yet it may be} bestowed however in different measures and degrees in conformity with the structural organization of the several species; the structure of the animal determining his sphere of existence. And the difference between the endowments of the several species is not radical; it is one of degree, and not of kind.²

It is precisely here, as it seems to me, that God has revealed to us a feature in the plan of creation scarcely less wonderful, than the creation of mind itself. That he has called into being one thinking rational principle principle, and given to it a multiform developement.³ That he has bestowed it upon a series of organic forms, each standing in a {different} relative position to the others, and also in different relative positions to time and to matter. The mind of the Deity sees alike the movement of the atom upon the atom, and {the} movements and mutual relations of the universe of matter. Man, who stands at the head of the animal series, is about as far removed from the

² Marginal note in pencil: Cat showing its mouth to S. P. Ely to take out the stuck bone of a turkey from his throat.

³ Marginal note: apportionment [?] of the principle.
zero of matter, the ultimate atom, as he is from the totality of matter, or the Universe; and
the subject of knowledge as well as the means of enjoyment below the ken of his rougher
intellect and coarser senses may be which may be open to the more delicate perceptions,
and exquisite senses of the tiny insect, may for ought we know, or have reason to
disbelieve, be as great and wonderful, as the subjects of knowledge, and means of
enjoyment which fall within man[‘]s sphere. As time is purely a relative term, is has
doubtless an expansion as we descend the scale, which furnishes in itself an increased
means of knowledge. A range for the developement and exercise of the thinking principle
is thus laid open; which {the} the creation of different species were created to occupy.
Thus the field of knowledge of the thinking principle is vastly expanded by a diversity of
organic forms, through which it is constituted to manifest itself; and the sum of the
powers of all the species is inconceivably greater far greater, than those of any single
{one} species. It would seem, then, that a full comprehension of the powers and
capacities of the thinking [sic] principle necessarily involves a consideration of its
manifestations throughout the animal kingdom; for the sum of the capabilities of this
thinking principle are not possessed by any species, but dwell in the animal races as a
totality, recognizing the lost, as well as existing species, and rendering possible
intelligences higher than man endowed with the same principle. This view of the subject
tends {rather} to exalt rather than debase our estimate of that intellectual and immortal
gift of God, which furnishes, in itself, a higher evidence of his power and wisdom, than
the Universe of matter, and the laws imposed upon it at the moment of creation.
III. Perception, Reflection, and Volition

We now come to consider whether the Mutae are capable of these three distinct acts, either one of which is characteristic of an intellectual principle. Upon the question of perception there can be no doubt, and I shall assume that they perceive external objects through the senses, in the same manner, and with the same effect as man does; and that all the phenomena of sensation in perception are the same in both. Not that it will be contended for a moment that the powers of perception in the inferior animals are equal with those of the human race; for as the members of the human family differ widely in the extent and accuracy of their perceptive powers, so is the difference great between the several species of animals. The perception of a simple object, as a tree, is precisely the same in all animals possessed of the organs of vision. If an eye be directed towards it, an impression is made upon the retina, which having been communicated by the optic nerve to the brain, the mind perceives the object. Up to this point the mode of communication with the external world is the same with all animals; but here there is a dividing off. It is denied by those who believe in instinct, that any creature below man, can make a rational use of the perceptions, which it is clear enough he gains every waking moment of his life. But as his acts are found in innumerable instances to be acts of intelligence and knowledge, that he does precisely as a man would under similar circumstances, to escape the very obvious conclusion that the animal was endowed with a thinking principle, we find the term instinct introduced, ascribing all these acts to a spontaneous impulse, thus denying to every creature below man the power of volition, as well as of reflection.
And here let me ask your attention {again} to this word instinct, that we may see whether any thing can be made of it. The old definitions of instinct are both clumsy and absurd. But Sir William Hamilton has given us one of a human instinct, which seems to me to express precisely what is intended by the {term} instinct of {as applied to} animals. He says, “an instinct is an agent which performs blindly and ignorantly a work of intelligence and knowledge” (Hamilton PL, P. 62). This agent is necessarily a spiritual, and not a material one. It must {then} be the work of the mind, or of some other principle connected with the body, and which it is, the definition is not particular to inform us. If I have been able to reach the author[’]s meaning, it is this. First that the mind is percipient of itself, and is capable necessarily conscious of all of its own processes. Now there are some acts performed by man perfectly intelligent and sensible, which he cannot tell how he came to perform. He was conscious of no anterior process of reasoning {which led to the act}, therefore it was not the deliberate act of his mind. Ergo it was the act of an unknown agent which possessed the power blindly and ignorantly to perform a work of intelligence and knowledge. This defintion of instinct can {not} bear examination any better than the old ones. The first mistake lies in assuming that the mind is necessarily conscious of all of its own processes, and that it is at all times percipient of itself. The mind is capable of operating with electrical rapidity. We teach the mind {to} think in human language, to cloth[e] its thoughts in a dress of words which. These words are material so to speak, and the use of every syllable requires a particle of time. Hence our mental processes which are deliberate require time for their evolution. But once place the mind under the pressure of sudden excitement, or sudden peril, and away in an instant goes your cumbrous machinery of human words; and the mind flies along a {succession} line of images {or short hand} symbols, illegible {all} perfectly intelligible /hieroglyphics/ [lightly crossed out] at a rate of velocity which defies
the tardy speed of consciousness. It is very reasonable to believe that all those acts of ours which we cannot account for in any rational manner, are the work, in some way, we cannot fully understand, of that great and marvellous endowment, the thinking principle. For that class of phenomena of the human mind usually called instinctive we have a corresponding class of phenomena among the inferior animals, but beyond these the acts of the inferior Mutae are as explainable as those of the human race. The newborn infant nurses, as they say instinctively. But the fact that it nurses is not more certain than that a human soul [mind written in pencil above soul] dwells in that infantile body. When any act manifests intelligence I should be very slow to believe the act either automatic or supernatural. It is far more reasonable, and in accordance with what we know of mind {intellect} {the principle of intelligence} to believe {that} the infantile mind was capable of experiencing the pain of hunger, and of knowing by intuition how to appease it, than to suppose this act to be the result either of physical machinery or supernatural power.

Whether the Mutae reflect or reason can only be demonstrated by their acts. We cannot settle that question point by the question direct. Under this branch of the subject some examples will be presented. The Rev. J. [or "I."] Murray in his work on Creation tells the following story. “An old and respectable man in the county of Montgomery used frequently to relate a circumstance he saw. In his youth he resided on the banks of the Hudson. One day he went to a bay on the river to shoot ducks or wild geese. When he came to the river he saw six geese beyond shot. He determined to wait for them to approach the shore. While sitting there he saw a fox come down to the shore, and stand some time and observe the geese. At length he turned and went into the woods
and came out with a very large bunch of moss in his mouth. He then entered the water very silently, sank himself, and then keeping the moss above water, himself concealed, he floated among the geese. Suddenly one of them was drawn under water, and the fox soon appeared on the shore with the goose on his back. He ascended the bank and found a hole made by the tearing up of a tree. This hole he cleared, placed in the goose and covered it with great care, strewing leaves over it. The fox then left; and while he was gone, the hunter unburied the goose, closed the hole and resolved to wait the issue. In about half an hour the fox returned with another in company. They went directly to the place where the goose had been buried, and threw out the earth. The goose could not be found. They stood regarding each other for some time, when suddenly the second fox attacked the other most furiously, as if offended by the trick of his friend. During the battle he shot them both.”

Dr. Burrows in his lecture in Albany cited an instance related by Dr. Abell in which a Newfoundland dog exhibited a dignified self esteem. He had been much annoyed by a diminutive cur, who with a safe distance between them ran after him whenever he passed. Finally the stately brute seized upon the little scrub by the nape of the neck, carried him howling to the river, into which he deliberately dropped him, and after standing for a while watching his struggles, he plunged in after him, and brought him safely to shore cured of his ambition. If he had torn his ears for him it would have been according to what we understand of the instinct of a dog; but was not this procedure something more than instinct?

There is one branch of the inquiry upon which all the time we are now able to give to this subject might be well expended; and that is upon
the acts of the inferior animals offensive in taking their prey, defensive in providing for their safety and strategic, both for defensive purposes. Who ever looked into the great, round clear eye of a lion without being impressed with the belief that there was a powerful will behind it; and a quick intelligence which on the open plain or in the jungle it would be hard to deceive, and difficult to overmatch. The life of every animal is made to him the price of vigilance; for every species wars and preys upon nearly every other, first the carnivorous upon all the non-carnivorous for the means of life; then the carnivora war with each other; and lastly, man treats them all alike as without any rights whatever {even to life itself} except by his permission; which one fact is no slight evidence that man is still a barbarian and a savage. This state of mutual relation in the animal kingdom not only renders the possession of intelligence absolutely necessary to every species for self preservation; but it has thrown in upon us a flood of evidence that they do reason, and reason acutely. The fox, for example, when pursued runs in the bed of some shallow creek to conceal every trace of his scent and footprints; or runs back upon his own track for some distance, and then makes a long leap at right angles, to break the chain by which he is followed, and thus to puzzle his pursuers. He evidently understands the means by which he is pursued, namely his scent, or footprints, and devises these plans to render them useless. {Deer the same.} [Preceding words added in pencil] He has also been known to feign death, under circumstances indicating a presence of mind somewhat extraordinary. A farmer once told me that a fox entered his hen house one night through a small apperture, which was the only opening, and succeeded without disturbing the family in destroying a sufficient number of the fowls to gorge himself; whereby
he so enlarge[d] his dimensions as to prevent render his egress through the opening impossible. In the morning the farmer discovered the havoc of the night, and the fox himself sprawled out on the floor of the coop apparently dead from surfeit. He entered, and taking the creature by the heels, carried him out, and across a little green sward to the side of the house, where he threw him down. This was no sooner done than the fox bounded up and away at full speed.

This trait is not peculiar to the fox. DeKay (Nat. Hist. NY, Part 1, Zool. Page 4), thus speaks of the opossum. “He appears to depend more upon cunning than upon strength or activity for the means of escape. When surprised on the ground he compresses himself into the smallest possible space, and remains perfectly quiet. If discovered and even handled in this state, it still counterfeits death, and takes the first opportunity to effect its escape. From this, and other traits of cunning has arisen the local phrase of “playing possum” to designate any adroit cheat.”

{Read here the story of Herndon’s tiger. Valley of the Amazon, 312.}

Dr. Kane (Arctic Explo. V 1, P. 149) has immortalized Grim, {one of} his newfoundland dog[s] firstly by introducing his intelligent face into his book, and secondly by telling the following story of him. “Grim” he says, “was an ancient dog; his teeth indicated many winters, and his limbs, once splendid tractors for the sledge, were now covered with warts and ringbones. Somehow or other, when the dogs were harnessing for a journey “old Grim” was sure not to be found; and upon one occasion, when he was detected hiding away in a cast off barrel, he incontinently became lame. Strange to say he has been lame ever since, except when the team is away without him.”
Many animals station sentinels both by day and some by night. As examples the chamois, the marmoset. Jays and Crows may be mentioned. It is said that geese at night always station a watch which is relieved at intervals during the night; and DeKay mentions the habit of the Quails of arranging themselves on the ground in a circle by night, with their heads outward.

Gibbon mentions the habit of the male vicuna to warn the females. Exploration [?] 16.)

Many animals provide magazines on which to subsist during the winter. This appears to be the result of a long process of reasoning; of which the impossibility of obtaining supplies during such period, the amount necessary, the manner of bestowing it, and the kinds of provisions which are not perishable may be the most obvious. If all these points were not heeded the consequences would be fatal. To satisfy present hunger is comparatively a simple matter, but to anticipate distant wants, the exercise of intelligence is requisite. The ant, the bee, the squirrel, the rat, the wood chuck and the beaver are distinguished instances of this forethought.

In a recent number of the London Quarterly, {January 1857} there is a long and curious article upon Rats, historical and anecdotal. The following is upon the authority of a Sussex clergyman[:] “Walking out in some meadows one evening he observed a great number of rats migrating from one place to another.” (Read from Miscellany P. 37.). A similar in the Knickerbocker for Nov. 1843. (Read it P. 597)

In Stansbury’s Report on the exploration of the valley of the great salt lake (P. 193), he tells the following story of a pelican. “In a ramble round the shore” etc. (Read from Book, P 193). Read also from P. 207. Rhinoceros Birds. Cumming vol. 1, 292.

Note.

Dr. Kane thus speaks of the disease which took off a number of his dogs before the first Arctic winter was over, which

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4 Marginal note: Magazines
was doubtless occasioned by the absence of light. He says (1. Kane’s Arctic Expedition, 157) “The[ir] disease is as clearly mental as in the case of any human being. The more material functions of the poor brutes go on without interruption; they eat voraciously, retain their strength and sleep well. But all the indications beyond this go to prove that the original {epilepsy}, which was the first manifestation of brain disease among them, has been followed by a true lunacy. They bark frenziedly at nothing, and walk in straight and curved lines with anxious and unwearied perseverance + + +5

[“]So it was with poor Flora our “wise dog.” She was seized with the endemic spasms, and, after a few wild violent paroxysms, lapsed into a lethargic condition, eating voraciously, but gaining no strength. This passing off, the same crazy buildup took possession of her, and she died of brain disease (arachnoidal effusion) in about six weeks.”6

Spawning grounds of fish. (Smithsonian Report, 1854, P. 288)
Insect habitations. (Smithsonian Report, 1855, P. 139)

There is a species of ant (red or brown) in the West Indies which builds its nest or hive in the trees, upon some branching limb, to escape its unsparing enemy the lizard; but as the lizard can ascend a tree, {(doubtful)} this was not a sufficient protection and we find that they construct covered ways from of mud from the limb to the trunk, and down the trunk to the ground. (Hervey Ely observed one of these nests with the covered way, and lizards about the foot of the tree lying in wait.)

A dog when following his master along a road by the scent of his footsteps, comes to a fork; he goes up one fork and failing to find his scent, he returns and goes up the other fork without even putting his nose to the ground. He draws the conclusion that because he did not take the first one, he must necessarily have taken the other.

One of Mrs. Ely’s cats loosing her kittens. Adopted one of another cat’s kittens.

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5 Marginal note: Ant Lion. Emmons Ag vol. 5, p. 186 – see 193. Ant Cuv. 456, Bees Cuv. 463
6 Marginal note: Elephants in the East Indies pile up timber under training, and go back a distance to see if it is straight and true, and if not they straighten the pile and repeat this until it is as near a true line as they can make it.
Frogs bury themselves in the sand, and mine (?) the water to take fish.

Cic. D. N. 2.49

“But “Who is not able to admire that act related by Aristotle, and many others from him? The cranes, when {they} seeking a colder climate, fly over the sea, take the form of a triangle; but the opposing air is divided by the extreme point of this triangle made by them, {then gradually to each side} as by oars and so the course of the birds is made lighter for their wings. But the base of the triangle, which the cranes make, this is employed advantageously by the winds [sic – probably an error for “birds’”], as it were from a ship’s stern; and they birds place their heads and necks upon the back of those flying before. But since the leader himself is not able to do so because he has not one upon whom he may rest, he flies back, that he also may rest, and one succeeds in the place of him from those which have rested; and this interchange is preserved in their whole flight.” Cicero De Nat. Deo. 11.49

“The wild goats in Crete, when they have been wounded with poisoned arrows, seek an herb, which is called dittany, which when they have eaten, the arrows are said to fall from the body.” Cic. N. D. 2.49

And the deer a short time before parturition purges herself with a certain herb which is called seselis. ibid

“And these animals, which were born but a little while before, without a master, nature being the leader, seek the dugs; and are filled from their abundance.” But, as we know, nothing {none} of these things are fortuitous; all these are the works of a provident and skilful nature.” ibid

What can I say, how great is much reason appears in the beasts for the perpetuation and preservation of their kind? + + What may I say, how great is the love of beasts in educating and guarding these, when they have brought forth; and even to death so long as they are able, they defend them. ibid

[End of the back of p. 18½]

7 Marginal note beside the previous three paragraphs: Here the word instinct would have been used if ever by the ancients.
It will {not} be considered necessary by you that facts of this examples of acts of the Mutae exhibiting intelligence should be multiplied any further. Not but that a well sustained argument must rest upon a wide foundation of attested facts; but for the reason that each one of you can recall on the instant a sufficient number of these facts which have fallen under your own observation to present fully the main question. A word here upon the volition of the Mutae. Dr. Hickock in his Rational Psychology denies to them the possession of the will in its strict philosophical sense. His argument on this point is so loaded with metaphysical subtleties that it is hard to plough through his periods without a broken head; but the conclusion is a sort of necessity because individual responsibility is annex'd to the possession of the will. Now we must oppose to all this special pleading the simple fact that the Mutae do put forth a will every day of their lives; that they do have power to get up or lay down, to eat or to drink, to bark or to sing, to play or to run, fight, to lay in wait for prey or to go forth in quest of it. If I call my cat, she comes or not as she pleases, because I have no coercive power over her will. If I call my dog, he comes, for the reason that his will is subordinate to mine, under the influence either of fear or affection, but in both cases they have an independent choice. The resolution of this question must after all be perfectly simple. A motive or inducement to do a certain act enters the mind of a dog. Unless he has a choice whether to do the act or not, he would necessarily do every act on the instant the motive arose, without the least power of restraint. Carry out this mode of action and he would lose his life every hour in the day. Without a will their acts would not only be fitful but senseless. Again all happiness depends wholly upon the possession by every animal of the control of himself.

8 The preceding two sentences ("If I call my cat . . . an independent choice.") are lightly crossed out and the word "will" written in the margin.
Without the power of choice to do or not to do a particular thing the lives of the Mutae would be divested of all possibility of happiness. A proposition denying to them volition is so unnatural, and so contrary to all observation, that it hardly requires a refutation.

Assuming then that the Mutae have the power of perception and volition, have they also the power of reflection; the ability to compare one fact with another, and to draw conclusions; the ability to discover the adaptation of means to an end. How came the Tiger to splash the water with his tail, if he did not know what every school boy knows, that it would draw the attention of every fish within a reasonable distance, and attract the most eager at once to the spot. How came he to use this knowledge unless he [sic] had an end to achieve by the act? How came old Grim to hide, when the other dogs were being harnessed for what he knew by experience to be a tiresome journey; and when this expedient failed, how came he to go lame without any other cause than to his dislike to the harness? I take it that it is at least the province of {the} human {mind} reason, to reason soundly upon facts; and there is no way of evading the plain and necessary interpretation of these acts. Upon analysis they present all the elements of reasoning from cause to effect, together with the demonstration itself of applying the means to effect the end. How came the fox to feign death unless when he found it impossible to get out of the coop except by the aid of the farmer, unless he knew that it was only in the capacity of a dead fox, the farmer would ever allow him to leave the scene of his spoilation? And yet to devise this plan was worthy [?] of a foxes mind, and rather taxes our confidence in a foxes nerves.

Now it is not at all necessary, for the purposes of this
argument, to advance one step beyond these two examples to dispose of the main question. If it is proved that a tiger is endowed with a principle which is capable of memory, remembering of perception, reflection and volition, then it follows that the exclusive possession of the thinking principle by man is at once, and forever exploded. The position so long, so unjustly and so arrogantly maintained that man is the only created being capable of reasoning, is found to be untrue in fact. But the research can be extended through the several species of the four orders with the same result so far as our knowledge of the ways and habits of each will enable us to prosecute it. With this great barrier, not of philosophy, but of human pride, removed, we shall be prepared to reconstruct the science of mind upon a wider, and a more enduring foundation. With the mind of man, preeminent in its endowments and immeasurably above the mind of the other species, standing at the head, and the great exemplar of the thinking principle; but ranging below it in a scale of gradation we shall find the mind of the elephant, the lion and the beaver; the mind of the bee, the ant, and the humming bird; the mind of the nautilus, of the fish, and even of the oyster, each adapted to the sphere prescribed to the species by the structural organization of the individual creature; and all alike exhibiting, under different modifications, the possession of that great and mysterious principle of intellect, which God created, and bestowed upon the animal kingdom as the crowning act of his power and wisdom.

I am now compelled to leave this, the most important branch of the subject, and which has been but little more than introduced, for the want of time.

Another question presents itself in this connection which

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9 Marginal note: Man
requires a careful presentation to render the conclusions I have attempted to establish of any real value; and that is, whether the difference in degree between the powers of the human intellect, and the intellect of the most intelligent of the Mutae was not so great, as to render the difference substantially a radical one; and this difference as you descend the scale increases so rapidly as to render it extremely necessary to preserve the link unbroken which connects the next highest, with the highest species. The hiatus between man and the species next below him is far greater than can be found in any other part of the scale; and it is sufficiently great to suggest, at least, the idea, that some intermediate species, and perhaps several of them, have dropped out in the course of the early ages, or that some existing species have been degraded beyond redemption. But with such conjectures we have nothing to do. I shall content myself, however, with suggesting, that the difference in intellectual power {in degree} between the highest specimens of man, and the lowest, between Daniel Webster, and a Bushman, is very probably as great, as between a Bushman and his neighbor the elephant; and so on down to the end of the scale. The volume of the mind does not depend upon the size of the body, neither must a principle to be mind, come up to a certain standard of power. The true question is first, what {qualities are} radical to mind, and to this I should answer, perception, memory, {imagination} reason, and a will. There may be other essentials, but the degree of the strength of each is immaterial. Then the next question is can the ant, for example, perceive, remember, reason, and will. Cicero answers this question as follows. “In formicâ non modo sensus, sed etiam mens, ratio, memoria.” {(De Nat. Deo., III. C. 9)} Pliny also answers it. “Et iis Republicae ratio, memoria, cura.” (Plin. Nat. Hist., Lib. XI. C. 36). If then the ant manifests these qualities which are radical to mind, he has a mind whether we concede it to him or not. I am satisfied that a full
There are several other questions which remain to be considered and which I shall merely refer to. One is articulate speech as a characteristic of the human race, whether it implies the possession of any principle which separates man radically from the other species. There appears to be nothing to justify the affirmative of this position. Articulate speech is an incidental result of structural organization. Cuvier says (An. King. P. 47), “Man is preeminently distinguished in the organ of voice; of all the Mammalia, he alone possesses the faculty of articulating sounds; its probable cause being the form of his mouth, and the great mobility of his lips.” But all the Mammalia alike have the organ of voice. He says elsewhere, (ib. 43), “The organ of voice (in the Mammalia) is always on the upper extremity of the trachea; a fleshy curtain, called the velum palati, establishes a direct communication between their larynx and nasal canal.”

Although the Mutae have not articulate speech, it does not follow that they have no mode of communication with each other. Thought is anterior to all language, and not necessarily dependent upon it. Every man must be conscious of mental processes and of reasoning from premises to conclusions without the use of words. From facts within our knowledge it would not be difficult to prove, I think, that the Mutae are able to communicate their thoughts to each other independent of the great fact that all social life would be impossible without it.

It is frequently stated as an objection to the views here presented, that man alone is a progressive animal; while the attainments of the Mutae are stationary from generation to generation, and from age to age. This is true in some species, but it is not true in the precise sense in which it is generally understood.

10 Marginal note: language
Man, indeed, progresses in knowledge from generation to generation, but yet the limits of the human understanding have not been advanced one hairs breadth within man's historical period. All the capacities of the entire race of man existed potentially in the first human pair.\textsuperscript{11} Man progresses in knowledge not only as an individual, but from age to age. He alone is able to perpetuate his intellectual achievements by means of a written language, thus making every discovery a foundation on which to mount up to a new discovery. This gives to him an advantage almost inconceivably great, and is sufficient of itself to account for the wide distance between him, and the next highest species. Notwithstanding portions of the human race have thus risen to the heights of civilization, other portions, as the Bushman and the Hotentot, still sit in the darkness of ignorance and intellectual imbecility. The Bushman, however, is of the human genus; and logically, the point of comparison between man and the species next below him, commences with the Bushman just as legitimately as with the European. The domestic animals furnish us with examples of the improvability of several species from generation to generation; and every individual creature necessarily improves with its growth and experience.\textsuperscript{11} Can any one assert that the bee and the ant do not teach their offspring, and thus hand down traditionary knowledge within their sphere of life, from generation to generation? We do not, at all events, know the contrary; and it is just as inadmissible, without proof, to assume the one as the other. But to recur to the point from which we started; that man progresses in knowledge only, and not in the ultimate strength of his capacities, we can make this apparent by contrasting the great intellects of the ancient and modern world. Compare Socrates, Plato and Aristotle with Bacon, Erasmus and Burke; Alexander and Caesar with Frederick the Great and Napoleon (and Wellington), Eaeschylus.
and Homer {and Aeschylus} with Shakespeare and Milton, Euclid and Archimedes with Newton and Kepler, and we do not find the modern man, developed under the accumulated knowledge of ages, one shade beyond his prototype in the strength of his genius or the profundity of his intellect.

With a slight reference to one other topic, I am done. Could the propositions advanced at the commencement of this inquiry be established and believed by the human race, it would result in great good to man, and to the animal races below him. As it is, we regard them {these races} as created primarily and altogether for our convenience. We deny them all rights, and savage them with wanton and unmerciful cruelty. The annual sacrifice of animal life to maintain our race is frightful, in its very excess, beyond our just wants as carnivorous by creation. If the human race should maintain its present attitude towards the Mutae, and progress in numbers and civilization for several centuries, the habitat of many species would contract until they would be finally extirpated. But this will never happen. God created every creature primarily for the creature himself. The gift of life was designed for him alone who received it at His hand, subject to the law of relation established between the species. He has adjusted a balance between these races, and given to each the vital and vegetative power necessary for the perpetuity of each species upon the earth. Every species is surrounded alike with the means of life, and the means of enjoyment; and no one is made dependent upon the will of another. He has also bestowed rights upon every species, which no other may violate and escape the consequences. I have often thought {that} the ancient philosopher, whoever he was who first promulgated the doctrine of the transmigration of souls, was worthy of immortal renown. Such a shield for the

12 Marginal note: animal food
protection of the inferior animals against the rapacity of man was never before devised by human genius, and perhaps never will {never} be again. Great is the pity, then, that like the shield of Achilles, it now only exists {only} in poetry. [p. 26]
Supplemental


The position intended to be taken with reference to the word instinct, is, first, that for all that class of acts in man which are called instinctive, {if rightly so called,} and by Hamilton, the work of an unknown agent, we have a corresponding class of acts among the Mutae which must in like manner, and for precisely the same reasons, be called instinctive; while all other acts of the Mutae are referable to an intellectual principle, the same as all the other acts of the human species; except in both cases those acts which are strictly involuntary. For example, the act of the a new born infant in nursing, which as a first act was done without foreknowing {absolutely} the end to be gained, is called instinctive; so in like manner the first act of a new born animal in nursing must be called instinctive. So also There are also other acts of the human mind which we call “instinctive beliefs,” – “instinctive judgements,” – “instinctive cognitions,” which {it is asserted} we cannot explain as the result of anterior mental processes, and therefore they are classed under the head of instinctive acts. Now in what is called the “sagacity” of the Mutae we have evidences of a corresponding class of acts, and which, for the same cause, {if the others are rightly so called} must be referred to the same unknown agent “which performs blindly and ignorantly a work of intelligence and knowledge[.”] After thus isolating a limited number of the {so called} unexplainable acts of both man and the Mutae, we have left the great body of the acts of both which manifest the existence and operation of an intelligent principle. If the dividing line between those limited acts which are not {supposed to be} explainable by any anterior mental process, and those which are explainable by anterior mental processes, in both man and the Mutae, could be maintained in its integrity, that is admitting corresponding acts and causes in both man and the inferior animals, {then} there would be no occasion to inquire whether the use of the term instinct was legitimate in connection with these acts, for two reasons: first, that no ground is presented on which to assert a
radical difference between the thinking principle of man and the Mutae; and second, that in discussing these subtle phenomena you enter a department of intellectual science in which it is extremely difficult to make any sensible advance, or reach any satisfactory result.

But while certain acts of man, which cannot {as it is claimed} be referred to anterior mental processes, are called instinctive, all of his other acts are left to rest upon the ordinary basis of mental causes. Not so however with the Mutae, the term instinct was introduced to account for their intelligent acts, and its definitions are made broad enough to include and explain all of their acts; and thus we have no dividing line between instinct and reason, no defined point where instinct ceases, and reason begins, leaving each one to concede reasoning powers to the Mutae in such measure and degree {or none at all} as his mere fancy may dictate. [Insert mark here, but nothing inserted.] It is impossible therefore to assign to the endowments of animals any fixed place in the intellectual scale, while we recognize the principle of instinct as at present defined.

Let us inquire then, first, into the origin and introduction of the term instinct, and the position of eminent naturalists in relation to its meaning and limits; and, second, whether there is such a principle or agent as instinct, according to received definitions.13

This term, as now used to explain the intelligent acts of the Mutae, is evidently of modern introduction. Its etymology does not suggest the present meaning. Instinguo, from whence instinctus, is of limited signification, meaning to instigate, incite, impel, leaving the cause of the instigation suggestion or impulse to be explained from without; while the present term includes both the fact and its cause. It is not a Greek word; {and} its nearest synonym Παρορμα to Παρορμησις, has precisely the same signification, to impel, incite, urge. As used by the Latins, it {was employed in its strict etymological sense, and} is applied to man; and never so far as I have been able to ascertain, was never applied to the acts of the Mutae (Cicero, De. Div. Lib. I. C. 18, Quint Ins Or L. 12 C. 10. §24 Aulus

13 Marginal note: Παρορμα to impel, excite, urge // Παρορμησις impulsion, incitation // Instiguo. to instigate, incite, impel // Instinctus. Instigated, incited, fixed, animated // Cicero, De Div, i.18 // N. D. 2.66
Gell 17.20 Tacitus Hist. 1. 22. Ib 68). The ancient estimate of the endowment of the Mutae was more liberal and comprehensive than the present. They used used [sic] the same terms in characterizing their intelligent acts [as] they did with reference to those of man. Pliny thus speaks of the ant (Plin. Nat. Hist XI 36[]) “Et iis Republicae ratio, memoria, cura”; and Cicero, “In formicâ non modo sensus sed etiam mens, ratio, memoria.” See also Virgil on the same subject (Aeneid IV.402). The word “intellectus” is used by Pliny in connection with the elephant (ib 8.1.5). As this word is no longer used in its original sense of a simple instigation or impulse, and we do not find it employed by the ancients in any other, it is reasonable to conclude that it is a modern term.

The history of its modern introduction I have not the facilities for tracing out. Locke, whose essay on the understanding appeared in 1687, does not use the word at all, although he has frequent occasion to speak of the endowments of the Mutae; and besides his system of intellectual philosophy runs counter to the claims of instinct as he opposes denies all innate ideas, {in opposition to Descarte who affirmed the existence of innate ideas.}\(^\text{14}\) Dr. Reid whose philosophy appeared in 17–[blank]\(^\text{15}\) is charged by some writers [?] as having been unfortunate in the use of the term “Common Sense” and “instinct” which may perhaps furnish some evidence that this term was first brought into conspicuous use in intellectual philosophy by him. The objection raised was that the term was used to explain some of the acts of the human mind, and not that it was wholly insufficient to account for the acts of the Mutae. He applies the term to both explain a large class of the acts of man, and the in effect, the whole of the acts of the Mutae.

If we now compare the several definitions of the term instinct as used both by naturalists and intellectual philosophers, it will appear that they all run in the same rut, and, with immaterial qualifications, are all taken from the same original.

Reid says “Instinct is the habitual power of producing effects like contrivances of reason, yet so far beyond the intelligence and experience

\(^{14}\) Marginal note: Bacon does not {appear to have} used the word instinct in connection with the endowments of animals.

\(^{15}\) “(Active Powers” is written just above the line
of the agent as to be utterly inexplicable by reference to them” (Reid’s Active Powers, P. [blank]).

In L’d. Monboddo “Ancient Metaphysics” is the following. “Instinct is a determination given by Almighty Wisdom to the mind of the brute, to act in such or such a way, upon such or such an occasion, without intelligence, without knowledge of good or ill, and without knowing for what purpose he acts.”

Hale (Origin of Mankind) says “Many analogical motions in animals, though I cannot call them voluntary, yet I see them spontaneous, I have reason to conclude are not simply mechanical + + + The sagacities and instincts of brutes, the spontaneousness of many of their motions, are not explicable without supposing some active determinate power, connected to and inherent in their spirits, of a higher extraction than the bare natural modifications of matter.”

Cuvier (An. King. Intro.) [“]The only method of obtaining a clear idea of instinct is by admitting the existence of innate and perpetual images or sensations in the sensorium which causes the animal to act in the same way as ordinary or accidental sensations usually do. It is a kind of perpetual vision or dream that always pursues it, and it may be considered in all that relates to its instinct as a kind of somnambulation.”

There is another general view of instinct which still prevails to some extent, and which I believe is substantially the idea of Des Cartes, and which reduces the Mutae to mere physical machines, namely “That their acts are in obedience to a law impressed upon their vital constitution, which impells them not only to perform certain acts necessary for the preservation of the species, but also to do the same things in the same way from generation to generation.”

In the Encyclopedia Britanica (Title Instinct) is the following definition. Instinct is “a certain power or disposition of mind, by which
independently of all instructions or experience, without deliberation, and without having any end in view, animals are unerringly directed to do spontaneously whatever is necessary for the preservation of the individual, or the continuance of the kind. ++

Instinctive actions have a cause, viz. the internal impulse by which they are spontaneous performed, but they cannot be said to have a motive, because they are not done with any view to consequences. ++ The bee and the beaver are endowed with an instinct which has the appearance of foresight. They build magazines and fill them with provisions, but the foresight is not theirs.”

Sir William Hamilton (Ham. Phil. Higher Ed. 62) has given us a definition which contains the pith of all previous ones, and has the singular merit of being intelligible. He says, “An instinct is an agent which performs blindly and ignorantly a work of intelligence and knowledge.”

See Paley’s Moral Philosophy on Animal instinct. [Line added in pencil.]