

We should be inclined to believe that the horse had starved, and that without a certain ration of oats no work could be expected from an animal.

Freud, *Origin and Development of Psycho-Analysis*, V

- 122 I hope to enlist your interest in considering the apparently trivial errors made by normal people. I propose now that we question someone who has no knowledge of psycho-analysis as to how he explains these occurrences.

His first answer is sure to be: "Oh, they are not worth any explanation; they are little accidents." What does the man mean by this? Does he mean to maintain that there are any occurrences so small that they fail to come within the causal sequence of things, that they might as well be other than they are? Anyone thus breaking away from the determination of natural phenomena, at any single point, has thrown over the whole scientific outlook on the world (*Weltanschauung*). One may point out to him how much more consistent is the religious outlook on the world, which emphatically assures us that "not one sparrow shall fall to the

ground" except God wills it. I think our friend would not be willing to follow his first answer to its logical conclusion; he would give way and say that if he were to study these things he would soon find some explanation of them.

Freud, *General Introduction to Psycho-Analysis*, II

- 123 In Aristotle the conception of human nature is perfectly sound; everything ideal has a natural basis and everything natural an ideal development.

Santayana, *Life of Reason*, I, Introduction

- 124 That the unification of nature is eventual and theoretical is a point useful to remember: else the relation of the natural world to poetry, metaphysics, and religion will never become intelligible. Lalande, or whoever it was, who searched the heavens with his telescope and could find no God, would not have found the human mind if he had searched the brain with a microscope.

Santayana, *Life of Reason*, I, 5

## 19.2 | The Nature of Life

Many of the passages collected here attempt to define the line that divides the living from the nonliving, and to enumerate the distinctive properties of living organisms, such as nutrition, growth, and reproduction. Within the domain of the living, further distinctions are made between plant and animal life, by reference to sensitivity and local motion as characteristics of animals not found in plants. Some quotations speak of the scale of life, the gradations of vitality, rising little by little from the vegetative level to more complex and more richly endowed forms of life; to which certain philosophers and theologians add levels of life above the highest terrestrial forms—the purely spiritual life of the angels and of God.

The reader will find some indications of

the age-old controversy between the vitalists and the mechanists, the one maintaining that life involves principles or factors that have no counterparts in the realm of inanimate things or machines, the other countering with the view that the same mechanical principles or factors that enable us to understand the operation of inanimate things also explain the processes of life. Crucial to this issue is Claude Bernard's introduction of the concept of homeostasis—the internal equilibrium of a living organism. Only living things appear to have an internal as well as an external environment, and are actively involved in the adjustment of the one to the other. In this connection it should also be pointed out that when soul is spoken of as the principle of life, it is not

necessarily conceived as something divorced from matter: early atomists, such as Lucretius, think of soul or mind as constituted by material particles, and Aristotle thinks of soul as inherent in living matter. For him, to be alive is to be besouled.

The origin of life or of living organisms is another basic subject treated in this section, and the discussions of it range from the account of its creation in *Genesis* or the one given by Plato in the *Timaeus*, to later theological commentaries on *Genesis* and then to

modern writers such as Darwin. And at least one author offers startling comments on the origin of life: this is Freud who, in his discussion of the life and death instincts, suggests that living things are driven by a profound impulse to rid themselves of the tensions of life and return to the sleep of inanimate existence. For other comments on life and death, viewed more narrowly from the human point of view, the reader is referred to Chapter 1 on MAN, especially Section 1.2 and Section 1.8.

1 And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so.

And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good.

And the evening and the morning were the third day.

*Genesis* 1:11–13

2 And God said, Let the waters bring forth abundantly the moving creature that hath life, and fowl that may fly above the earth in the open firmament of heaven.

And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind, and every winged fowl after his kind: and God saw that it was good.

And God blessed them, saying, Be fruitful, and multiply, and fill the waters in the seas, and let fowl multiply in the earth.

And the evening and the morning were the fifth day.

*Genesis* 1:20–23

3 And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.

*Genesis* 2:7

4 For to him that is joined to all the living there is hope: for a living dog is better than a dead lion.

*Ecclesiastes* 9:4

5 *Timaeus*. Now of the divine, he himself [God] was the creator, but the creation of the mortal he committed to his offspring. And they, imitating him, received from him the immortal principle of the

soul; and around this they proceeded to fashion a mortal body, and made it to be the vehicle of the soul, and constructed within the body a soul of another nature which was mortal.

Plato, *Timaeus*, 69B

6 This power of self-nutrition can be isolated from the other powers mentioned, but not they from it—in mortal beings at least. The fact is obvious in plants; for it is the only psychic power they possess.

This is the originaive power the possession of which leads us to speak of things as *living* at all, but it is the possession of sensation that leads us for the first time to speak of living things as animals; for even those beings which *possess* no power of local movement but do possess the power of sensation we call animals and not merely living things.

Aristotle, *On the Soul*, 413a31

7 The soul is the cause or source of the living body. The terms cause and source have many senses. But the soul is the cause of its body alike in all three senses which we explicitly recognize. It is (a) the source or origin of movement, it is (b) the end, it is (c) the essence of the whole living body.

That it is the last, is clear; for in everything the essence is identical with the ground of its being, and here, in the case of living things, their being is to live, and of their being and their living the soul in them is the cause or source. Further, the actuality of whatever is potential is identical with its formulable essence.

It is manifest that the soul is also the final cause of its body. For Nature, like mind, always does whatever it does for the sake of something, which something is its end. To that something corresponds in the case of animals the soul and in this it follows the order of nature; all natural bodies are organs of the soul. This is true of those that

enter into the constitution of plants as well as of those which enter into that of animals. This shows that that for the sake of which they are is soul. We must here recall the two senses of 'that for the sake of which', viz. (a) the end to achieve which, and (b) the being in whose interest, anything is or is done.

We must maintain, further, that the soul is also the cause of the living body as the original source of local movement. The power of locomotion is not found, however, in all living things. But change of quality and change of quantity are also due to the soul. Sensation is held to be a qualitative alteration, and nothing except what has soul in it is capable of sensation. The same holds of the quantitative changes which constitute growth and decay; nothing grows or decays naturally except what feeds itself, and nothing feeds itself except what has a share of soul in it.

Aristotle, *On the Soul*, 415<sup>b</sup>8

- 8 As to being what is called an animal and a living thing, we find that in all beings endowed with both characteristics (viz. being an animal and being alive) there must be a single identical part in virtue of which they live and are called animals; for an animal *qua* animal cannot avoid being alive. But a thing need not, though alive, be animal, for plants live without having sensation, and it is by sensation that we distinguish animal from what is not animal.

Aristotle, *On Youth and Old Age*, *On Life and Death*, *On Breathing*, 467<sup>b</sup>18

- 9 Of necessity, life must be coincident with the maintenance of heat, and what we call death is its destruction.

Aristotle, *On Youth and Old Age*, *On Life and Death*, *On Breathing*, 469<sup>b</sup>18

- 10 Nature proceeds little by little from things lifeless to animal life in such a way that it is impossible to determine the exact line of demarcation, nor on which side thereof an intermediate form should lie. Thus, next after lifeless things in the upward scale comes the plant, and of plants one will differ from another as to its amount of apparent vitality; and, in a word, the whole genus of plants, whilst it is devoid of life as compared with an animal, is endowed with life as compared with other corporeal entities. Indeed, as we just remarked, there is observed in plants a continuous scale of ascent towards the animal. So, in the sea, there are certain objects concerning which one would be at a loss to determine whether they be animal or vegetable. For instance, certain of these objects are fairly rooted, and in several cases perish if detached; thus the pinna is rooted to a particular spot, and the solen (or razor-shell) cannot survive withdrawal from its burrow. Indeed, broadly speaking, the entire genus of testaceans have a resemblance

to vegetables, if they be contrasted with such animals as are capable of progression.

In regard to sensibility, some animals give no indication whatsoever of it, whilst others indicate it but indistinctly. Further, the substance of some of these intermediate creatures is fleshlike, as is the case with the so-called tethya (or ascidians) and the acalephae (or sea-anemones); but the sponge is in every respect like a vegetable. And so throughout the entire animal scale there is a graduated differentiation in amount of vitality and in capacity for motion.

A similar statement holds good with regard to habits of life. Thus of plants that spring from seed the one function seems to be the reproduction of their own particular species, and the sphere of action with certain animals is similarly limited. The faculty of reproduction, then, is common to all alike. If sensibility be superadded, then their lives will differ from one another in respect to sexual intercourse through the varying amount of pleasure derived therefrom, and also in regard to modes of parturition and ways of rearing their young. Some animals, like plants, simply procreate their own species at definite seasons; other animals busy themselves also in procuring food for their young, and after they are reared quit them and have no further dealings with them; other animals are more intelligent and endowed with memory, and they live with their offspring for a longer period and on a more social footing.

The life of animals, then, may be divided into two acts—procreation and feeding; for on these two acts all their interests and life concentrate. Their food depends chiefly on the substance of which they are severally constituted; for the source of their growth in all cases will be this substance. And whatsoever is in conformity with nature is pleasant, and all animals pursue pleasure in keeping with their nature.

Aristotle, *History of Animals*, 588<sup>b</sup>4

1. If we except the movement of the universe, things with life are the causes of the movement of all else, that is of all that are not moved by one another by mutual impact. And so all their motions have a term or limit, inasmuch as the movements of things with life have such. For all living things both move and are moved with some object, so that this is the term of all their movement, the end, that is, in view. Now we see that the living creature is moved by intellect, imagination, purpose, wish, and appetite. And all these are reducible to mind and desire.

Aristotle, *On the Motion of Animals*, 700<sup>b</sup>11

- 12 Now (1) some existing things are eternal and divine whilst others admit of both existence and non-existence. But (2) that which is noble and divine is always, in virtue of its own nature, the cause of the better in such things as admit of being

better or worse, and what is not eternal does admit of existence and non-existence, and can partake in the better and the worse. And (3) soul is better than body, and the living, having soul, is thereby better than the lifeless which has none, and being is better than not being, living than not living. These, then, are the reasons of the generation of animals. For since it is impossible that such a class of things as animals should be of an eternal nature, therefore that which comes into being is eternal in the only way possible. Now it is impossible for it to be eternal as an individual (though of course the real essence of things is in the individual)—were it such it would be eternal—but it is possible for it as a species.

Aristotle, *Generation of Animals*, 731<sup>b</sup>24

- 13 One might suppose, in connexion with the origin of men and quadrupeds, that, if ever they were really 'earth-born' as some say, they came into being in one of two ways; that either it was by the formation of a scolex at first or else it was out of eggs. For either they must have had in themselves the nutriment for growth (and such a conception is a scolex) or they must have got it from elsewhere, and that either from the mother or from part of the conception. If then the former is impossible (I mean that nourishment should flow to them from the earth as it does in animals from the mother), then they must have got it from some part of the conception, and such generation we say is from an egg.

Aristotle, *Generation of Animals*, 762<sup>b</sup>28

- 14 Whatever things we perceive to have sense, you must yet admit to be all composed of senseless first-beginnings: manifest tokens which are open to all to apprehend, so far from refuting or contradicting this, do rather themselves take us by the hand and constrain us to believe that, as I say, living things are begotten from senseless things. We may see in fact living worms spring out of stinking dung, when the soaked earth has gotten putridity after excessive rains; and all things besides change in the same way: rivers, leaves, and glad pastures change into cattle, cattle change their substance into our bodies, and often out of these the powers of wild beasts and the bodies of the strong of wing are increased. Therefore nature changes all foods into living bodies and engenders out of them all the senses of living creatures, much in the same way as she dissolves dry woods into flames and converts all things into fires. Now do you see that it is of great moment in what sort of arrangement the first-beginnings of things are severally placed and with what others they are mixed up, when they impart and receive motions?

Lucretius, *Nature of Things*, II

- 15 The mind has more to do with holding the fastnesses of life and has more sovereign sway over it

than the power of the soul. For without the understanding and the mind no part of the soul can maintain itself in the frame: the smallest fraction of time, but follows at once in the other's train and passes away into the air and leaves the cold limbs in the chill of death. But he abides in life whose mind and understanding continue to stay with him: though the trunk is mangled with its limbs shorn all round about it, after the soul has been taken away on all sides and been severed from the limbs, the trunk yet lives and inhales the ethereal airs of life. . . . When . . . I shall choose to speak of the soul, showing it to be mortal, believe that I speak of the mind as well, inasmuch as both make up one thing and are one united substance. First of all then since I have shown the soul to be fine and to be formed of minute bodies and made up of much smaller first-beginnings than is the liquid of water or mist or smoke:—for it far surpasses these in nimbleness and is moved, when struck by a far slenderer cause. . . . Well then since you see on the vessels being shattered the water flow away on all sides, and since mist and smoke pass away into air, believe that the soul too is shed abroad and perishes much more quickly and dissolves sooner into its first bodies, when once it has been taken out of the limbs of a man and has withdrawn. For, when the body that serves for its vessel cannot hold it, if shattered from any cause and rarefied by the withdrawal of blood from the veins, how can you believe that this soul can be held by any air? How can that air which is rarer than our body hold it in?

Lucretius, *Nature of Things*, III

- 16 When the earth, all muddled by the recent flood, grew warm again, under the kindly radiance of the sun in heaven, she brought forth countless forms of life. In some cases she reproduced shapes which had been previously known, others were new and strange. It was at that time that she gave birth to the huge Python, among the rest; though indeed she had no wish to do so; and this snake, whose body covered so great a stretch of the hillside, struck terror into the new-born race of men, for they had never known its like. The archer-god, Apollo, who had never before used such weapons against anything but fleeing deer or timid wild goats, almost emptied his quiver to destroy the serpent, overwhelming it with a thousand arrows, till the venom flowed out from all its dark wounds. Then, in case the passage of time should blot out the memory of his glorious deed, the god established sacred games, which he called Pythian, after the serpent he had vanquished.

Ovid, *Metamorphoses*, I

- 17 If there were not an inborn faculty given by Nature to each one of the organs at the very beginning, then animals could not continue to live: even for a few days, far less for the number of years



which they actually do. For let us suppose they were under no guardianship, lacking in creative ingenuity and forethought; let us suppose they were steered only by material forces, and not by any special faculties (the one attracting what is proper to it, another rejecting what is foreign, and yet another causing alteration and adhesion of the matter destined to nourish it); if we suppose this. I am sure it would be ridiculous for us to discuss natural, or, still more, psychical, activities—or, in fact, life as a whole.

Galen, *Natural Faculties*, II, 3

- 18 Imagine the heart to be, at the beginning, so small as to differ in no respect from a millet-seed, or, if you will, a bean; and consider how otherwise it is to become large than by being extended in all directions and acquiring nourishment throughout its whole substance, in the way that, as I showed a short while ago, the semen is nourished. But even this was unknown to Erasistratus—the man who sings the artistic skill of Nature! He imagines that animals grow like webs, ropes, sacks, or baskets, each of which has, woven on to its end or margin, other material similar to that of which it was originally composed.

But this, most sapient sir, is not growth, but genesis! For a bag, sack, garment, house, ship, or the like is said to be still coming into existence [undergoing genesis] so long as the appropriate form for the sake of which it is being constructed by the artificer is still incomplete. Then, when does it grow? Only when the basket, being complete, with a bottom, a mouth, and a belly, as it were, as well as the intermediate parts, now becomes larger in all these respects. “And how can this happen?” someone will ask. Only by our basket suddenly becoming an animal or a plant; for growth belongs to living things alone. Possibly you imagine that a house grows when it is being built, or a basket when being plaited, or a garment when being woven? It is not so, however. Growth belongs to that which has already been completed in respect to its form, whereas the process by which that which is still becoming attains its form is termed not growth but genesis. That which is, grows, while that which is not, becomes.

Galen, *Natural Faculties*, II, 3

- 19 Now all life, even the least valuable, is an activity, and not a blind activity like that of flame; even where there is not sensation the activity of life is no mere haphazard play of Movement: any object in which life is present, and object which participates in Life, is at once enreasoned in the sense that the activity peculiar to life is formative, shaping as it moves.

Life, then, aims at pattern as does the pantomimic dancer with his set movements; the mime, in himself, represents life, and, besides, his move-

ments proceed in obedience to a pattern designed to symbolize life.

Plotinus, *Third Ennead*, II, 16

- 20 Fire, air, water, earth, are in themselves soulless . . . and there are no other forms of body than these four. . . . None of these, then, having life, it would be extraordinary if life came about by bringing them together; it is impossible, in fact, that the collocation of material entities should produce life, or mindless entities mind.

No one, moreover, would pretend that a mere chance mixing could give such results: some regulating principle would be necessary, some Cause directing the admixture: that guiding principle would be—soul.

Plotinus, *Fourth Ennead*, VII, 2

- 21 Since all who think about God think of Him as living, they only can form any conception of Him that is not absurd and unworthy who think of Him as life itself; and, whatever may be the bodily form that has suggested itself to them, recognize that it is by life it lives or does not live, and prefer what is living to what is dead; who understand that the living bodily form itself, however it may outshine all others in splendour, overtop them in size, and excel them in beauty, is quite a distinct thing from the life by which it is quickened; and who look upon the life as incomparably superior in dignity and worth to the mass which is quickened and animated by it. Then, when they go on to look into the nature of the life itself, if they find it mere nutritive life, without sensibility, such as that of plants, they consider it inferior to sentient life, such as that of cattle; and above this, again, they place intelligent life, such as that of men. And, perceiving that even this is subject to change, they are compelled to place above it, again, that unchangeable life, which is not at one time foolish, at another time wise, but on the contrary is wisdom itself.

Augustine, *Christian Doctrine*, I, 8

- 22 We can gather to what things life belongs and to what it does not from such things as manifestly possess life. Now life manifestly belongs to animals, for it is said in the book on *Plants* [Aristotle's] that “in animals life is manifest.” We must, therefore, distinguish living from non-living things by comparing them to that by reason of which animals are said to live, and this it is in which life is manifested first and remains last. We say then that an animal begins to live when it begins to move of itself, and as long as such movement appears in it, so long is it considered to be alive. When it no longer has any movement of itself, but is only moved by another power, then its life is said to fail, and the animal to be dead. From this it is clear that those things are properly called living that move themselves by some kind of movement, whether it be movement properly so

called, as the act of an imperfect thing, that is, of a thing in potency, is called movement; or movement in a more general sense, as when said of the act of a perfect thing, as understanding and feeling are called movement according to the book on the *Soul* [Aristotle's]. Accordingly all things are said to be alive that determine themselves to movement or operation of any kind; but those things that cannot by their nature do so, cannot be called living, unless by some likeness.

Aquinas, *Summa Theologica*, I, 18, 1

- 23 Life is in the highest degree properly in God. In proof of this it must be considered that since a thing is said to live insofar as it operates of itself and not as moved by another, the more perfectly this is found in anything, the more perfect is the life of that thing.

Aquinas, *Summa Theologica*, I, 18, 3

- 24 Bodies not endowed with life, which are the lowest in the order of nature, generate their like, not through some medium, but by themselves; thus fire by itself generates fire. But living bodies, as being more powerful, act so as to generate their like, both without and with a medium. Without a medium—in the work of nutrition, in which flesh generates flesh; with a medium—in the act of generation, because the seed of the animal or plant derives a certain active force from the soul of the generator, just as the instrument derives a certain moving power from the principal agent. And as it matters not whether we say that something is moved by the instrument or by the principal agent, so neither does it matter whether we say that the soul of the generated is caused by the soul of the generator, or by some seminal power derived from it.

Aquinas, *Summa Theologica*, I, 118, 1

- 25 God is effectively the life both of the soul by charity, and of the body by the soul; but formally charity is the life of the soul, even as the soul is the life of the body. Consequently we may conclude from this that just as the soul is immediately united to the body, so is charity to the soul.

Aquinas, *Summa Theologica*, II-II, 23, 2

- 26 *I see the water, I see the fire, the air, the earth, and all their combinations meet their dissolution and endure but little;*

and yet these things were creatures, so that if that which I have said to thee be true, they ought to be secure against corruption.

The Angels, brother, and the unsullied country in which thou art, may be declared to be created, even as they are, in their entire being;

but the elements which thou hast named and all the things compounded of them, have by created virtue been informed.

Created was the matter which they hold, created

was the informing virtue in these stars which sweep around them.

The life of every brute and of the plants is drawn from compounds having potency, by the ray and movement of the sacred lights.

But your life is breathed without mean by the supreme beneficence who maketh it enamoured of itself, so that thereafter it doth ever long for it.

Dante, *Paradiso*, VII, 124

- 27 *Panurge*. Now let our microcosm be fancied conform to this model in all its members; lending, borrowing, and owing, that is to say, according to its own nature. For nature hath not to any other end created man, but to owe, borrow, and lend; no greater is the harmony amongst the heavenly spheres, than that which shall be found in its well ordered policy. The intention of the founder of this microcosm is, to have a soul therein to be entertained, which is lodged there, as a guest with its host, that it may live there for awhile. Life consisteth in blood; blood is the seat of the soul; therefore the chiefest work of the microcosm is, to be making blood continually.

At this forge are exercised all the members of the body; none is exempted from labour, each operates apart, and doth its proper office. And such is their hierarchy, that perpetually the one borrows from the other, the one lends the other, and the one is the other's debtor. The stuff and matter convenient, which nature giveth to be turned into blood, is bread and wine. All kind of nourishing victuals is understood to be comprehended in those two, and from hence in the Gothish tongue is called *companage*. To find out this meat and drink, to prepare and boil it, the hands are put to work, the feet do walk and bear up the whole bulk of the corporal mass; the eyes guide and conduct all; the appetite in the orifice of the stomach, by means of a little sourish black humour, called melancholy, which is transmitted thereto from the milt, giveth warning to shut in the food. The tongue doth make the first essay, and tastes it; the teeth to chew it, and the stomach doth receive, digest, and chilify it. The mesaraic veins suck out of it what is good and fit, leaving behind the excrements, which are, through special conduits, for that purpose, voided by an expulsive faculty. Thereafter it is carried to the liver, where it being changed again, it by the virtue of that new transmutation becomes blood. What joy, conjecture you, will then be found amongst those officers, when they see this rivulet of gold, which is their sole restorative?

Rabelais, *Gargantua and Pantagruel*, III, 4

- 28 The eternity of things is connected with the reciprocal interchange of generation and decay; and as the sun, now in the east and then in the west, completes the measure of time by his ceaseless rev-

olutions, so are the fleeting things of mortal existence made eternal through incessant change, and kinds and species are perpetuated though individuals die.

William Harvey, *Animal Generation*, 14

- 29 Nature does nothing in vain, nor works in any round-about way when a shorter path lies open to her, that an egg can be produced in no other manner than that in which we now see it engendered, *viz.*, by the concurring act of the cock and hen. Neither, in like manner, in the present constitution of things, can a cock or hen ever be produced otherwise than from an egg. Thus the cock and the hen exist for the sake of the egg, and the egg, in the same way, is their antecedent cause; it were therefore reasonable to ask, with Plutarch, which of these was the prior, the egg or the fowl? Now the fowl is prior by nature, but the egg is prior in time; for that which is the more excellent is naturally first; but that from which a certain thing is produced must be reputed first in respect of time. Or we may say: this egg is older than that fowl (the fowl having been produced from it); and, on the contrary, this fowl existed before that egg (which she has laid). And this is the round that makes the race of the common fowl eternal; now pullet, now egg, the series is continued in perpetuity; from frail and perishing individuals an immortal species is engendered.

William Harvey, *Animal Generation*, 28

- 30 If there were machines which bore a resemblance to our body and imitated our actions as far as it was morally possible to do so, we should always have two very certain tests by which to recognise that, for all that, they were not real men. The first is, that they could never use speech or other signs as we do when placing our thoughts on record for the benefit of others. For we can easily understand a machine's being constituted so that it can utter words, and even emit some responses to action on it of a corporeal kind, which brings about a change in its organs; for instance, if it is touched in a particular part it may ask what we wish to say to it; if in another part it may exclaim that it is being hurt, and so on. But it never happens that it arranges its speech in various ways, in order to reply appropriately to everything that may be said in its presence, as even the lowest type of man can do. And the second difference is, that although machines can perform certain things as well as or perhaps better than any of us can do, they infallibly fall short in others, by the which means we may discover that they did not act from knowledge, but only from the disposition of their organs. For while reason is a universal instrument which can serve for all contingencies, these organs have need of some special adaptation for every particular action. From this it follows that it is morally impossible that there should be sufficient

diversity in any machine to allow it to act in all the events of life in the same way as our reason causes us to act.

Descartes, *Discourse on Method*, V

- 31 Life is a pure flame, and we live by an invisible sun within us.

Sir Thomas Browne, *Urn-Burial*, V

- 32 The arithmetical machine produces effects which approach nearer to thought than all the actions of animals. But it does nothing which would enable us to attribute will to it, as to the animals.

Pascal, *Pensées*, VI, 340

- 33 If an animal did by mind what it does by instinct, and if it spoke by mind what it speaks by instinct, in hunting and in warning its mates that the prey is found or lost, it would indeed also speak in regard to those things which affect it closer, as example, "Gnaw me this cord which is wounding me, and which I cannot reach."

Pascal, *Pensées*, VI, 342

- 34 The effects of reason increase continually whereas instinct always remains in the same state. Bee-hives were as well laid out a thousand years ago as today, and each bee forms that hexagon as exactly the first time as the last. It is the same with everything animals make by that hidden motion. Nature teaches them in response to the pressure of necessity; but this frail knowledge dies with its need: as they receive it without study, they do not have the happiness of preserving it; and every time they are given it, they find it new, because nature, whose object is merely to maintain animals in an order of limited perfection, infuses in them this necessary knowledge, always the same, lest they perish, and does not allow them to add to it lest they go beyond the boundaries prescribed to them.

Pascal, *Preface to the Treatise on the Vacuum*

- 35 *Raphael.* The Sixt, and of Creation last arose  
With Eevning Harps and Mattin, when God said,  
Let th' Earth bring forth Fowle living in her kinde,  
Cattel and Creeping things, and Beast of the Earth,  
Each in thir kinde. The Earth obey'd, and strait  
Op'ning her fertil Woomb teem'd at a Birth  
Innumerable living Creatures, perfet formes,  
Limb'd and full grown: out of the ground up rose  
As from his Laire the wilde Beast where he wonns  
In Forrest wilde, in Thicket, Brake, or Den;  
Among the Trees in Pairs they rose, they walk'd:  
The Cattel in the Fields and Meddowes green:  
Those rare and solitarie, these in flocks  
Pasturing at once, and in broad Herds upsprung.  
The grassie Clods now Calv'd, now half appeer'd  
The Tawnie Lion, pawing to get free



His hinder parts, then springs as broke from Bonds,

And Rampant shakes his Brinded main; the Ounce,

The Libbard, and the Tyger, as the Moale Rising, the crumb'd Earth above them threw

In Hillslocks; the swift Stag from under ground Bore up his branching head: scarce from his

*Behemoth* biggest born of Earth upheav'd His vastness: Fleec'd the Flocks and bleating rose,

As Plains: ambiguous between Sea and Land The River Horse and scallie Crocodile.

At once came forth whatever creeps the ground, Insect or Worme; those wav'd their limber fans

For wings, and smallest Linnæus exact In all the Lixies doct of Summers pride

With spots of Gold and Purple, azure and green: These as a line their long dimension drew,

Streaking the ground with sinuous trace; not all Minims of Nature; some of Serpent kinde

Wondrous in length and corpulence invol'd Their Snake foulds, and added wings. First crept

The Parsimonious Kermec, provident Of future, in small room large heart enclos'd,

Pattern of just equalitie perhaps Hereafter, join'd in her popular Tribes

Of Commonallitie: swarming, next appeerd The Royal Bee that feeds her Husband Drone

Deliciously, and builds her waxen Cells With Honey stor'd: the rest are numberless,

And thou thir Natures know'st, and gav'st them Names, Needles to thee repeared; nor unknown

The Serpent suit'ed Beast of all the field, Of huge extent sometimes, with brazen Eyes

And haire Male terrific, though to thee Not noxious, but obedient at thy call.

Now Heav'n in all her Glories shon, and rowld Her motions, as the great first-Movers hand

First wheeld thir course; Earth in her rich attire Consummate lovly smil'd; Aire, Water, Earth,

By Fowl, Fish, Beast, was flow'd, was swim, was walkt

Frequent; and of the Sixt day yet remain'd; There wanted yet the Master work, the end

Of all yet don; a Creature who not prone And Brute as other Creatures, but endu'd

With Sanctitie of Reason, might erect His Statue, and upright with Front serene

Govern the rest, self-knowing, and from thence Magnanimous to correspond with Heav'n,

But grateful to acknowledge whence his good Descends, thither with heart and voice and eyes

Directed in Devotion, to adore And worship God Supream, who made him chief

Of all his works.

Milton, *Paradise Lost*, VII, 449

36 We must . . . consider wherein an oak differs from a mass of matter, and that seems to me to be

in this, that the one is only the cohesion of parti-

cles of matter any how united, the other such a

disposition of them as constitutes the parts of an

oak; and such an organization of those parts as is

fit to receive and distribute nourishment, so as to

continue and frame the wood, bark, and leaves,

etc., of an oak, in which consists the vegetable

life. That being then one plant which has such an

organization of parts in one coherent body, par-

taking of one common life, it continues to be the

same plant as long as it partakes of the same life,

though that life be communicated to new particles

of matter vitally united to the living plant, in a

like continued organization conformable to that

sort of plant. For this organization, being at any

one instant in any one collection of matter, is in

that particular concrete distinguished from all

other, and is that individual life, which existing

constantly from that moment both forwards and

backwards, in the same continuity of insensibly

succeeding parts united to the living body of the

plant, it has that identity which makes the same

plant, and all the parts of it, parts of the same

plant, during all the time that they exist united in

that continued organization, which is fit to convey

the case is not so much different in *brutes* but

that any one may hence see what makes an ani-

mal and continues it the same. Something we

have like this in machines, and may serve to illus-

trate it. For example, what is a watch? It is plain

it is nothing but a fit organization or construction

of parts to a certain end, which, when a sufficient

force is added to it, it is capable to attain. If we

would suppose this machine one continued body,

all whose organized parts were repaired, in-

creased, or diminished by a constant addition or

separation of insensible parts, with one common

life, we should have something very much like the

body of an animal; with this difference, that, in

an animal the fitness of the organization, and the

motion wherein life consists, begin together, the

motion coming sensibly from without, is often away

force coming sensibly from without, is often away

when the organ is in order, and well fitted to re-

ceive it.

Locke, *Concerning Human Understanding*,  
Bk. II, XXXVII, 4-5

37 That there should be more species of intelligent

creatures above us, than there are of sensible and

material below us, is probable to me from hence:

that in all the visible corporeal world, we see no

chasm or gaps. All quite down from us the de-

scend, that in each remove differ very little one

things, that in each remove differ very little one

from the other. There are fishes that have wings,

and are not strangers to the airy region: and there

are some birds that are inhabitants of the water,

whose blood is cold as fishes, and their flesh so like

in taste that the scrupulous are allowed them on



fish-days. There are animals so near of kin both to birds and beasts that they are in the middle between both: amphibious animals link the terrestrial and aquatic together; seals live at land and sea, and porpoises have the warm blood and entrails of a hog; not to mention what is confidently reported of mermaids, or sea-men. There are some brutes that seem to have as much knowledge and reason as some that are called men: and the animal and vegetable kingdoms are so nearly joined, that, if you will take the lowest of one and the highest of the other, there will scarce be perceived any great difference between them: and so on, till we come to the lowest and the most inorganic parts of matter, we shall find everywhere that the several species are linked together, and differ but in almost insensible degrees.

Locke, *Concerning Human Understanding*,  
Bk. III, VI, 12

- 38 Any one almost would take it for an affront to be asked what he meant by it [life]. And yet if it comes in question, whether a plant that lies ready formed in the seed have life; whether the embryo in an egg before incubation, or a man in a swoon without sense or motion, be alive or no; it is easy to perceive that a clear, distinct, settled idea does not always accompany the use of so known a word as that of life is.

Locke, *Concerning Human Understanding*,  
Bk. III, X, 22

- 39 In a watch, one part is the instrument by which the movement of the others is effected, but one wheel is not the efficient cause of the production of the other. One part is certainly present for the sake of another, but it does not owe its presence to the agency of that other. For this reason, also, the producing cause of the watch and its form is not contained in the nature of this material, but lies outside the watch in a being that can act according to ideas of a whole which its causality makes possible. Hence one wheel in the watch does not produce the other, and, still less, does one watch produce other watches, by utilizing, or organizing, foreign material; hence it does not of itself replace parts of which it has been deprived, nor, if these are absent in the original construction, does it make good the deficiency by the subvention of the rest; nor does it, so to speak, repair its own casual disorders. But these are all things which we are justified in expecting from organized nature. An organized being is, therefore, not a mere machine. For a machine has solely *motive power*, whereas an organized being possesses inherent *formative power*, and such, moreover, as it can impart to material devoid of it—material which it organizes. This, therefore, is a self-propagating formative power, which cannot be explained by the capacity of movement alone, that is to say, by mechanism.

Kant, *Critique of Teleological Judgement*, 65

- 40 The resurrection of a spiritual body from a natural body does not appear in itself a more wonderful instance of power than the germination of a blade of wheat from the grain, or of an oak from an acorn. Could we conceive an intelligent being so placed as to be conversant only with inanimate or full-grown objects, and never to have witnessed the process of vegetation or growth; and were another being to show him two little pieces of matter, a grain of wheat and an acorn, to desire him to examine them, to analyze them if he pleased, and endeavor to find out their properties and essences; and then to tell him, that however trifling these little bits of matter might appear to him, that they possessed such curious powers of selection, combination, arrangement, and almost of creation that upon being put into the ground they would choose, among all the dirt and moisture that surrounded them, those parts which best suited their purpose, that they would collect and arrange these parts with wonderful taste, judgment, and execution, and would rise up into beautiful forms, scarcely in any respect analogous to the little bits of matter which were first placed in the earth. I feel very little doubt that the imaginary being which I have supposed would hesitate more, would require better authority and stronger proofs, before he believed these strange assertions than if he had been told that a being of mighty power, who had been the cause of all that he saw around him and of that existence of which he himself was conscious, would, by a great act of power upon the death and corruption of human creatures, raise up the essence of thought in an incorporeal, or at least invisible, form to give it a happier existence in another state.

Malthus, *Population*, XII

- 41 *Wagner*. It flashes, see! Now truly we may hold  
That if from substances a hundredfold,  
Through mixture—for on mixture all depends—  
Man's substance gently be consolidated,  
In an alembic sealed and segregated,  
And properly be cohobated,  
In quiet and success the labour ends.  
*Turning toward the furnace again.*  
'Twill be! The mass is working clearer,  
Conviction gathers, truer, nearer.  
What men as Nature's mysteries would hold,  
All that to test by reason we make bold,  
And what she once was wont to organize,  
That we bid now to crystallize.  
*Mephistopheles*. Whoever lives long learns full  
many things;  
By naught in this world can he ever be surprised.  
I've seen already in my wanderings  
Many a mortal who was crystallized.  
*Wag*. [*hitherto constantly attentive to the phial*]  
It rises, flashes, gathers on;  
A moment, and the deed is done.  
A great design at first seems mad; but we

Henceforth will laugh at chance in procreation,  
And such a brain that is to think transcendently  
Will be a thinker's own creation.

*Looking at the phial rapturously.*

The glass resounds with lovely might;  
It dims, it clears; life *must* begin to be.  
A dainty figure greets my sight;  
A pretty manikin I see.  
What more do we or does the world want now?  
The mystery's within our reach.  
Come, hearken to this sound, and listen how  
It turns to voice, it turns to speech.

*Homunculus [in the phial, to Wagner]*

Well, Daddy! how are you? It was no jest.  
Come, press me tenderly upon your breast,  
But not too hard, for fear the glass might  
shatter.

That is the property of matter:  
For what is natural the All has place;  
What's artificial needs restricted space.

Goethe, *Faust*, II, 2, 6848

- 42 Life is the one universal soul, which, by virtue of the enlivening BREATH, and the informing WORD, all organized bodies have in common, each *after its kind*.

Coleridge, *Aids to Reflection*

- 43 The One remains, the many change and pass;  
Heaven's light forever shines, Earth's shadows fly;  
Life, like a dome of many-colored glass,  
Stains the white radiance of Eternity,  
Until Death tramples it to fragments.

Shelley, *Adonais*, LII

- 44 Was it that this old carpenter had been a lifelong wanderer, whose much rolling to and fro not only had gathered no moss, but what is more, had rubbed off whatever small outward clings might have originally pertained to him? He was a stripped abstract; an unfractioned integral; uncompromised as a new-born babe; living without premeditated reference to this world or the next. You might almost say, that this strange uncompromisedness in him involved a sort of unintelligence; for in his numerous trades, he did not seem to work so much by reason or by instinct, or simply because he had been tutored to it, or by any intermixture of all these, even or uneven; but merely by a kind of deaf and dumb, spontaneous literal process. He was a pure manipulator; his brain, if he had ever had one, must have early oozed along into the muscles of his fingers. He was like one of those unreasoning but still highly useful *mulum in parvo*, Sheffield contrivances, assuming the exterior—though a little swelled—of a common pocket-knife; but containing, not only blades of various sizes, but also screw-drivers, corkscrews, tweezers, awls, pens, rulers, nail-filers, counter-sinkers. So, if his superiors wanted to use the carpenter for a screw-driver, all they had to do

was to open that part of him, and the screw was fast: or if for tweezers, take him up by the legs, and there they were.

Yet, as previously hinted, this omni-tooled, open-and-shut carpenter, was, after all, no mere machine of an automaton. If he did not have a common soul in him, he had a subtle something that somehow anomalously did its duty. What that was, whether essence of quicksilver, or a few drops of harishorn, there is no telling. But there it was; and there it had abided for now some sixty years or more. And this it was, this same unaccountable, cunning life-principle in him; this it was, that kept him a great part of the time soliloquising; but only like an unreasoning wheel, which also hummingly soliloquises; or rather, his body was a sentry-box and this soliloquiser on guard there, and talking all the time to keep himself awake.

Melville, *Moby Dick*, CVII

- 45 There is no exception to the rule that every organic being naturally increases at so high a rate, that, if not destroyed, the earth would soon be covered by the progeny of a single pair. Even slow-breeding man has doubled in twenty-five years, and at this rate, in less than a thousand years, there would literally not be standing-room for his progeny.

Darwin, *Origin of Species*, III

- 46 It is good . . . to try in imagination to give to any one species an advantage over another. Probably in no single instance should we know what to do. This ought to convince us of our ignorance on the mutual relations of all organic beings; a conviction as necessary as it is difficult to acquire. All that we can do, is to keep steadily in mind that each organic being is striving to increase in a geometrical ratio; that each at some period of its life, during some season of the year, during each generation or at intervals, has to struggle for life and to suffer great destruction. When we reflect on this struggle, we may console ourselves with the full belief, that the war of nature is not incessant, that no fear is felt, that death is generally prompt, and that the vigorous, the healthy, and the happy survive and multiply.

Darwin, *Origin of Species*, III

- 47 The affinities of all the beings of the same class have sometimes been represented by a great tree. I believe this simile largely speaks the truth. The green and budding twigs may represent existing species; and those produced during former years may represent the long succession of extinct species. At each period of growth all the growing twigs have tried to branch out on all sides, and to overtop and kill the surrounding twigs and branches, in the same manner as species and groups of species have at all times overmastered

other species in the great battle for life. The limbs divided into great branches, and these into lesser and lesser branches, were themselves once, when the tree was young, budding twigs, and this connection of the former and present buds by ramifying branches may well represent the classification of all extinct and living species in groups subordinate to groups. Of the many twigs which flourished when the tree was a mere bush, only two or three, now grown into great branches, yet survive and bear the other branches; so with the species which lived during long-past geological periods very few have left living and modified descendants. From the first growth of the tree, many a limb and branch has decayed and dropped off; and these fallen branches of various sizes may represent those whole orders, families, and genera which have now no living representatives, and which are known to us only in a fossil state. As we here and there see a thin straggling branch springing from a fork low down in a tree, and which by some chance has been favoured and is still alive on its summit, so we occasionally see an animal like the *Ornithorhynchus* or *Lepidosiren*, which in some small degree connects by its affinities two large branches of life, and which has apparently been saved from fatal competition by having inhabited a protected station. As buds give rise by growth to fresh buds, and these, if vigorous, branch out and overtop on all sides many a feeble branch, so by generation I believe it has been with the great Tree of Life, which fills with its dead and broken branches the crust of the earth, and covers the surface with its everbranching and beautiful ramifications.

Darwin, *Origin of Species*, IV

- 48 Authors of the highest eminence seem to be fully satisfied with the view that each species has been independently created. To my mind it accords better with what we know of the laws impressed on matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes, like those determining the birth and death of the individual. When I view all beings not as special creations, but as the lineal descendants of some few beings which lived long before the first bed of the Cambrian system was deposited, they seem to me to become ennobled. Judging from the past, we may safely infer that not one living species will transmit its unaltered likeness to a distant futurity. And of the species now living very few will transmit progeny of any kind to a far distant futurity; for the manner in which all organic beings are grouped, shows that the greater number of species in each genus, and all the species in many genera, have left no descendants, but have become utterly extinct. We can so far take a prophetic glance into futurity as to foretell that it will be the common and widely-spread species,

belonging to the larger and dominant groups within each class, which will ultimately prevail and procreate new and dominant species. As all the living forms of life are the lineal descendants of those which lived long before the Cambrian epoch, we may feel certain that the ordinary succession by generation has never once been broken, and that no cataclysm has desolated the whole world. Hence we may look with some confidence to a secure future of great length. And as natural selection works solely by and for the good of each being, all corporeal and mental endowments will tend to progress towards perfection.

It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by laws acting around us. These laws, taken in the largest sense, being Growth with Reproduction; Inheritance which is almost implied by reproduction; Variability from the indirect and direct action of the conditions of life and from use and disuse; a Ratio of Increase so high as to lead to a Struggle for Life, and as a consequence to Natural Selection, entailing Divergence of Character and the Extinction of less-improved forms. Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.

Darwin, *Origin of Species*, XV

- 49 We have given to man a pedigree of prodigious length, but not, it may be said, of noble quality. The world, it has often been remarked, appears as if it had long been preparing for the advent of man: and this, in one sense is strictly true, for he owes his birth to a long line of progenitors. If any single link in this chain had never existed, man would not have been exactly what he now is. Unless we wilfully close our eyes, we may, with our present knowledge, approximately recognise our parentage; nor need we feel ashamed of it. The most humble organism is something much higher than the inorganic dust under our feet; and no one with an unbiased mind can study any living creature, however humble, without being struck with enthusiasm at its marvellous structure and properties.

Darwin, *Descent of Man*, I, 6



- 50 I propose . . . to prove that the science of vital phenomena must have the same foundations as the science of the phenomena of inorganic bodies, and that there is no difference in this respect between the principles of biological science and those of physico-chemical science. Indeed, as we have already said, the goal which the experimental method sets itself is everywhere the same; it consists in connecting natural phenomena with their necessary conditions or with their immediate causes. In biology, since these conditions are known, physiologists can guide the manifestation of vital phenomena as physicists guide the natural phenomena, the laws of which they have discovered; but in doing so, experimenters do not act on life.

Yet there is absolute determinism in all the sciences, because every phenomenon being necessarily linked with physico-chemical conditions, men of science can alter them to master the phenomenon, i.e., to prevent or to promote its appearing. As to this, there is absolutely no question in the case of inorganic bodies. I mean to prove that it is the same with living bodies, and that for them also determinism exists.

Claude Bernard, *Experimental Medicine*, II, 1

- 51 A living organism is nothing but a wonderful machine endowed with the most marvellous properties and set going by means of the most complex and delicate mechanism. There are no forces opposed and struggling one with another; in nature there can be only order and disorder, harmony or discord.

Claude Bernard, *Experimental Medicine*, II, 1

- 52 The organism is merely a living machine so constructed that, on the one hand, the outer environment is in free communication with the inner organic environment, and, on the other hand, the organic units have protective functions, to place in reserve the materials of life and uninterruptedly to maintain the humidity, warmth and other conditions essential to vital activity. Sickness and death are merely a dislocation or disturbance of the mechanism which regulates the contact of vital stimulants with organic units.

Claude Bernard, *Experimental Medicine*, II, 1

- 53 Life is creation. In fact, a created organism is a machine which necessarily works by virtue of the physico-chemical properties of its constituent elements. To-day we differentiate three kinds of properties exhibited in the phenomena of living beings: physical properties, chemical properties and vital properties. But the term "vital properties" is itself only provisional; because we call properties vital which we have not yet been able to reduce to physico-chemical terms; but in that we shall doubtless succeed some day.

Claude Bernard, *Experimental Medicine*, II, 2

- 54 If some iron filings be sprinkled on a table and a magnet brought near them, they will fly through the air for a certain distance and stick to its surface. A savage seeing the phenomenon explains it as the result of an attraction or love between the magnet and the filings. But let a card cover the poles of the magnet, and the filings will press forever against its surface without its ever occurring to them to pass around its sides and thus come into more direct contact with the object of their love. Blow bubbles through a tube into the bottom of a pail of water, they will rise to the surface and mingle with the air. Their action may again be poetically interpreted as due to a longing to recombine with the mother-atmosphere above the surface. But if you invert a jar full of water over the pail, they will rise and remain lodged beneath its bottom, shut in from the outer air, although a slight deflection from their course at the outset, or a re-descent towards the rim of the jar when they found their upward course impeded, would easily have set them free.

If now we pass from such actions as these to those of living things, we notice a striking difference. Romeo wants Juliet as the filings want the magnet; and if no obstacles intervene he moves towards her by as straight a line as they. But Romeo and Juliet, if a wall be built between them, do not remain idiotically pressing their faces against its opposite sides like the magnet and the filings with the card. Romeo soon finds a circuitous way, by scaling the wall or otherwise, of touching Juliet's lips directly. With the filings the path is fixed; whether it reaches the end depends on accidents. With the lover it is the end which is fixed, the path may be modified indefinitely.

William James, *Psychology*, I

- 55 In a general theory of evolution the inorganic comes first, then the lowest forms of animal and vegetable life, then forms of life that possess mentality, and finally those like ourselves that possess it in a high degree. As long as we keep to the consideration of purely outward facts, even the most complicated facts of biology, our task as evolutionists is comparatively easy. We are dealing all the time with matter and its aggregations and separations; and although our treatment must perforce be hypothetical, this does not prevent it from being *continuous*. The point which as evolutionists we are bound to hold fast to is that all the new forms of being that make their appearance are really nothing more than results of the redistribution of the original and unchanging materials. The self-same atoms which, chaotically dispersed, made the nebula, now, jammed and temporarily caught in peculiar positions, form our brains; and the "evolution" of the brains, if understood, would be simply the account of how the atoms came to be so caught and jammed. In this story no new *natures*, no factors not present at

the beginning, are introduced at any later stage.

But with the dawn of consciousness an entirely new nature seems to slip in, something whereof the potency was *not* given in the mere outward atoms of the original chaos.

William James, *Psychology*, VI

- 56 Is each thing born fitted to particular other things, and to them exclusively, as locks are fitted to their keys? Undoubtedly this must be believed to be so. Each nook and cranny of creation, down to our very skin and entrails, has its living inhabitants, with organs suited to the place, to devour and digest the food it harbors and to meet the dangers it conceals; and the minuteness of adaptation thus shown in the way of *structure* knows no bounds. Even so are there no bounds to the minuteness of adaptation in the way of *conduct* which the several inhabitants display.

William James, *Psychology*, XXIV

- 57 If . . . all organic instincts are conservative, historically acquired, and are directed towards regression, towards reinstatement of something earlier, we are obliged to place all the results of organic development to the credit of external, disturbing, and distracting influences. The rudimentary creature would from its very beginning not have wanted to change, would, if circumstances had remained the same, have always merely repeated the same course of existence. But in the last resort it must have been the evolution of our earth, and its relation to the sun, that has left its imprint on the development of organisms. The conservative organic instincts have absorbed every one of these enforced alterations in the course of life and have stored them for repetition; they thus present the delusive appearance of forces striving after change and progress, while they are merely endeavouring to reach an old goal by ways both old and new. This final goal of all organic striving can be stated too. It would be counter to the conservative nature of instinct if the goal of life were a state never hitherto reached. It must rather be an ancient starting point, which the living being left long ago, and to which it harks back again by all the circuitous paths of development. If we may assume as an experience admitting of no exception that everything living dies from causes within itself, and returns to the inorganic, we can only say "*The goal of all life is death,*" and, casting back, "*The inanimate was there before the animate.*"

Freud, *Beyond the Pleasure Principle*, V

- 58 At one time or another, by some operation of force which still completely baffles conjecture, the properties of life were awakened in lifeless matter. Perhaps the process was a prototype resembling that other one which later in a certain stratum of living matter gave rise to consciousness. The tension then aroused in the previously inanimate

matter strove to attain an equilibrium; the first instinct was present, that to return to lifelessness. The living substance at that time had death within easy reach; there was probably only a short course of life to run, the direction of which was determined by the chemical structure of the young organism. So through a long period of time the living substance may have been constantly created anew, and easily extinguished, until decisive external influences altered in such a way as to compel the still surviving substance to ever greater deviations from the original path of life, and to ever more complicated and circuitous routes to the attainment of the goal of death. These circuitous ways to death, faithfully retained by the conservative instincts, would be neither more nor less than the phenomena of life as we now know it. If the exclusively conservative nature of the instincts is accepted as true, it is impossible to arrive at any other suppositions with regard to the origin and goal of life.

If these conclusions sound strangely in our ears, equally so will those we are led to make concerning the great groups of instincts which we regard as lying behind the vital phenomena of organisms. The postulate of the self-preservative instincts we ascribe to every living being stands in remarkable contrast to the supposition that the whole life of instinct serves the one end of bringing about death. The theoretic significance of the instincts of self-preservation, power, and self-assertion, shrinks to nothing, seen in this light; they are part-instincts designed to secure the path to death peculiar to the organism and to ward off possibilities of return to the inorganic other than the immanent ones, but the enigmatic struggle of the organism to maintain itself in spite of all the world, a struggle that cannot be brought into connection with anything else, disappears. It remains to be added that the organism is resolved to die only in its own way; even these watchmen of life were originally the myrmidons of death. Hence, the paradox comes about that the living organism resists with all its energy influences (dangers) which could help it to reach its life-goal by a short way (a short circuit, so to speak); but this is just the behaviour that characterizes a pure instinct as contrasted with an intelligent striving.

Freud, *Beyond the Pleasure Principle*, V

- 59 Are we to follow the clue of the poet-philosopher [Plato] and make the daring assumption that living substance was at the time of its animation rent into small particles, which since that time strive for reunion by means of the sexual instincts? That these instincts—in which the chemical affinity of inanimate matter is continued—passing through the realm of the protozoa gradually overcome all hindrances set to their striving by an environment charged with stimuli dangerous to life, and are impelled by it to form a protecting covering layer?

And that these dispersed fragments of living substance thus achieve a multicellular organization, and finally transfer to the germ-cells in a highly concentrated form the instinct for reunion? I think this is the point at which to break off.

Freud, *Beyond the Pleasure Principle*, VI

- 60 All life, animal and vegetable, seems in its essence like an effort to accumulate energy and then to let it flow into flexible channels, changeable in shape, at the end of which it will accomplish infinitely varied kinds of work. That is what the *vital impetus*, passing through matter, would fain do all at once. It would succeed, no doubt, if its power were unlimited, or if some reinforcement could come to it from without. But the impetus is finite, and it has been given once for all. It cannot overcome all obstacles. The movement it starts is sometimes turned aside, sometimes divided, always opposed; and the evolution of the organized world is the unrolling of this conflict.

Bergson, *Creative Evolution*, III

- 61 If our analysis is correct, it is consciousness, or rather supra-consciousness, that is at the origin of life. Consciousness, or supra-consciousness, is the name for the rocket whose extinguished fragments fall back as matter; consciousness, again, is the name for that which subsists of the rocket itself, passing through the fragments and lighting them up into organisms. But this consciousness, which is a *need of creation*, is made manifest to itself only where creation is possible. It lies dormant when life is condemned to automatism; it awakens as soon as the possibility of a choice is restored.

Bergson, *Creative Evolution*, III

- 62 From our [man's] point of view, life appears in its entirety as an immense wave which, starting from a center, spreads outwards, and which on almost the whole of its circumference is stopped and converted into oscillation: at one single point the obstacle has been forced, the impulsion has passed freely. It is this freedom that the human form registers. Everywhere but in man, consciousness has had to come to a stand; in man alone it has kept on its way. Man, then, continues the vital movement indefinitely, although he does not draw along with him all that life carries in itself. On other lines of evolution there have traveled other tendencies which life implied, and of which, since everything interpenetrates, man has, doubtless, kept something, but of which he has kept only

very little. It is as if a vague and formless being, whom we may call, as we will, man or superman, had sought to realize himself, and had succeeded only by abandoning a part of himself on the way. The losses are represented by the rest of the animal world, and even by the vegetable world, at least in what these have that is positive and above the accidents of evolution.

Bergson, *Creative Evolution*, III

- 63 As the smallest grain of dust is bound up with our entire solar system, drawn along with it in that undivided movement of descent which is materiality itself, so all organized beings, from the humblest to the highest, from the first origins of life to the time in which we are, and in all places as in all times, do but evidence a single impulsion, the inverse of the movement of matter, and in itself indivisible. All the living hold together, and all yield to the same tremendous push. The animal takes its stand on the plant, man bestrides animality, and the whole of humanity, in space and in time, is one immense army galloping beside and before and behind each of us in an overwhelming charge able to beat down every resistance and clear the most formidable obstacles, perhaps even death.

Bergson, *Creative Evolution*, III

- 64 And life? Life itself? Was it perhaps only an infection, a sickening of matter? Was that which one might call the original procreation of matter only a disease, a growth produced by morbid stimulation of the immaterial? The first step toward evil, toward desire and death, was taken precisely then, when there took place that first increase in the density of the spiritual, that pathologically luxuriant morbid growth, produced by the irritant of some unknown infiltration; this, in part pleasurable, in part a motion of self-defence, was the primeval stage of matter, the transition from the insubstantial to the substance. This was the Fall. The second creation, the birth of the organic out of the inorganic, was only another fatal stage in the progress of the corporeal toward consciousness, just as disease in the organism was an intoxication, a heightening and unlicensed accentuation of its physical state; and life, life was nothing but the next step on the reckless path of the spirit dishonoured; nothing but the automatic blush of matter roused to sensation and become receptive for that which awakened it.

Mann, *Magic Mountain*, V