FRASER'S MAGAZINE.

MAY 1873.

LECTURES ON MR. DARWIN'S PHILOSOPHY OF LANGUAGE.

By Professor Max Müller.

FIRST LECTURE,

Delivered at the Royal Institution, March 22, 1873.

PHILOSOPHY is not, as is sometimes supposed, a mere intellectual luxury; it is, under varying disguises, the daily bread of the whole world. Though the workers and speakers must always be few, those for whom they work and speak are many; and though the waves run highest in the centres of literary life, the widening circles of philosophic thought reach in the end to the most distant shores. What is thought-out and written down in the study, is soon taught in the schools, preached from the pulpits, and discussed at the corners of the streets. There are at the present moment materialists and spiritualists, realists and idealists, positivists and mystics, evolutionists and specialists to be met with in the workshops as well as in the lecture-rooms, and it may safely be asserted that the intellectual vigour and moral health of a nation depend no more on the established religion than on the dominant philosophy of the realm.

No one who at the present moment watches the state of the intellectual atmosphere of Europe, can fail to see that we are on the eve of a storm which will shake the oldest convictions of the world, and upset everything that is not firmly rooted. Whether we look to England, France, or Germany, everywhere we see, in the recent manifestoes of their philosophers, the same thoughts struggling for recognition —thoughts not exactly new, but presented in a new and startling form. There is everywhere the same desire to explain the universe, such as we know it, without the admission of any plan, any object, any superintendence; a desire to remove all specific barriers, not only those which separate man from the animal, and the animal from the plant, but those also which separate organic from inorganic bodies; lastly, a desire to explain life as a mode of chemical action, and thought as a movement of nervous molecules.

It is difficult to find a general name for these philosophic tendencies, particularly as their principal representatives differ widely from each other. It would be unfair to class the coarse materialism of Büchner with the thoughtful realism of Spencer. Nor does it seem right to use the name of Darwinism in that vague and undefined sense in which it has been used so frequently of late, comprehending under that title not only the care-

fully worded conclusions of that great observer and thinker, but likewise the bold generalisations of his numerous disciples. I shall mention only one, but a most important point, on which so-called Darwinism has evidently gone far beyond Mr. Darwin. It is well known that, according to Mr. Darwin, all animals and plants have descended from about eight or ten progenitors. He is satisfied with this, and declines to follow the deceitful guidance of analogy, which would lead us to the admission of but one prototype. And he adds, that even if he were to infer from analogy that all the organic beings which have ever lived on this earth had descended from some one primordial form, he would hold that life was first breathed into that primordial form by the Creator. Very different from this is the conclusion proclaimed by Professor Haeckel, the most distinguished and most strenuous advocate of Mr. Darwin's opinions in Germany. He maintains that in the present state of physiological knowledge, the idea of a Creator, a Maker, a Life-giver, has become unscientific; that the admission of one primordial form is sufficient; and that that first primordial form was a Moneres, produced by self-generation.

I know, indeed, of no name sufficiently comprehensive for this broad stream of philosophic thought, but the name of '*Evolutionary Materialism*' is perhaps the best that can be framed. I am afraid that it will be objected to by those who imagine that materialism is a term of reproach. It is so in a moral sense, but no real student of the history of philosophy would use the word for such a purpose. In the historical evolution of philosophy, materialism has as much right as spiritualism, and it has taught us many lessons for which we ought to be most grateful. To say that materialism degrades mind to the level of matter is a false accusation, because what the materialist means by matter is totally different from what the spiritualist means by it, and from what it means in common parlance. The matter of the materialist contains, at least potentially, the highest attributes that can be assigned to any object of knowledge; the matter of the spiritualist is simply an illusion; while, in common parlance, matter is hardly more than stuff and rubbish. Let each system of philosophy be judged out of its own mouth, and let us not wrangle about words more than we can help. Philosophical progress, like political progress, prospers best under party government, and the history of philosophy would lose half its charm and half its usefulness, if the struggle between the two great parties in the realm of thought, the spiritualist, and the materialist, the idealist, and the realist, were ever to cease. As thunderstorms are wanted in nature to clear the air and give us breath, the human mind, too, stands in need of its tempests, and never does it display greater vigour and freshness than after it has passed through one of the decisive battles in the world of thought.

But though allowing to the materialist philosophers all the honour that is due to a great and powerful party, the spiritualist may hate and detest materialism with the same hatred with which the conservative hates radicalism, or at all events with such a modicum of hatred as a philosopher is capable of; and he has a perfect right to oppose, by all the means at his disposal, the exclusive sway of materialistic opinions. Though from a purely philosophical point of view, we may admit that spiritualism is as one-sided as materialism, that they are both but two faces of the same head, that each can see but one half of the world, yet no one who has worked his way honestly through the problems of material-

ism and spiritualism would deny that the conclusions of Hume are more disheartening than those of Berkeley, and that the strongest natures only can live under the pressure of such opinions as those which were held by Lametrie or Schopenhauer. To some people, I know, such considerations will seem beside the point. They hold that scientific research, whatever its discoveries may be, is never to be allowed to touch the deeper convictions of our soul. They seem to hold that the world may have been created twice, once according to Moses, and once according to Darwin. I confess I cannot adopt this artificial distinction, and I feel tempted to ask those cold-blooded philosophers the same question which the German peasant asked his bishop, who, as a prince, was amusing himself on week-days, and, as a bishop, praying on Sundays. 'Your Highness, what will become of the bishop, if the Devil comes and takes the prince?' Scientific research is not intended for intellectual exercise and amusement only, and our scientific convictions will not submit to being kept in quarantine. If we once embark on board the *Challenger*, we cannot rest with one foot on dry land. Wherever it leads us, we must follow; wherever it lands us, there we must try to live. Now, it does make a difference whether we live in the atmosphere of Africa or of Europe, and it makes the same difference whether we live in the atmosphere of spiritualism or materialism. The view of the world and of our place in it, as indicated by Mr. Darwin, and more sharply defined by some of his followers, does not touch scientific interests only; it cuts to the very heart, and must become to every man to whom truth, whether you call it scientific or religious, is sacred, a question of life and death, in the deepest and fullest sense of the word.

In the short course of three Lectures which I have undertaken to give this year in this Institution, I do not intend to grapple with the whole problem of Evolutionary Materialism. My object is simply to point out a strange omission, and to call attention to one kind of evidence—I mean the evidence of language—which has been most unaccountably neglected, both in studying the development of the human intellect, and in determining the position which man holds in the system of the world. Is it not extraordinary, for instance, that in the latest work on Psychology, language should hardly ever be mentioned, language without which no thought can exist, or, at all events, without which no thought has ever been realised or expressed? It does not matter what view of language we take; under all circumstances its intimate connection with thought cannot be doubted. Call language a mass of imitative cries, or a heap of conventional signs; let it be the tool or the work of thought; let it be the mere garment or the very embodiment of mind—whatever it is, surely it has something to do with the historical or palæontological, and with the individual or embryological evolution of the human self. It may be very interesting to the psychologist to know the marvellous machinery of the senses, beginning with the first formation of nervous channels, tracing the process in which the reflex action of the molecules of the afferent nerves produces a reaction in the molecules of the efferent nerves, following up the establishment of nervous centres and nervous plexuses, and laying bare the whole network of the telegraphic wires through which messages are flashed from station to station. Yet, much of that network and its functions admits, and can admit, of an hypothetical interpretation only; while we have before us another network—I mean language—in its endless variety, where every movement of the mind, from the

first tremor to the last calm utterance of our philosophy, may be studied as in a faithful photograph. And while we know the nervous system only such as it is, or, if we adopt the system of evolution, such as it has gradually been brought from the lowest to the highest state of organisation, but are never able to watch the actual historical or palæontological process of its formation, we know language, not only as it is, but can watch it in its constant genesis, and in its historical progress from simplicity to complexity, and again from complexity to simplicity. For let us not forget that language has two aspects. We, the historical races of mankind, use it, we speak and think it, but we do not make it. Though the faculty of language may be congenital, all languages are traditional. The words in which we think are channels of thought which we have not dug ourselves, but which we found ready-made for us. The work of making language belongs to a period in the history of mankind beyond the reach of tradition, and of which we, in our advanced state of mental development, can hardly form a conception. Yet that period must have had an historical reality as much as the period during which small annual deposits formed the strata of the globe on which we live. As during enormous periods of time the Earth was absorbed in producing the abundant carboniferous vegetation which still supplies us with the means of warmth, light, and life, there must have been a period during which the human mind had no other work but that of linguistic vegetation, the produce of which still supplies the stores of our grammars and dictionaries. After the great bulk of language was finished, a new work began, that of arranging and defining it, and of now and then coining a new word for a new thought. And all this we can still see with our own eyes, as it were, in the quarries opened by the Science of Language. No microscope will ever enable us to watch the formation of a new nervous ganglion, while the Science of Language shows us the formation of new mental ganglia in the formation of every new word. Besides, let us not forget that the whole network of the nerves is outside the mind. A state of nervous action may be parallel, but it never is identical with a state of consciousness (*Principles of Psychology*, II. 592), and even the parallelism between nervous states and states of consciousness is, when we come to details, beyond all comprehension (*Ib.* I. 140). Language, on the contrary, is not outside the mind, but is *the* outside of the mind. Language without thought is as impossible as thought without language; and although we may by abstraction distinguish between what the Greeks called inward and outward Logos, yet in reality and full actuality language is one and indivisible—language is very thought. On this more hereafter.

Just at the end of his interesting work on the *Principles of Psychology*, Mr. Herbert Spencer shows, by one remark, that he is well aware of the importance of language for a proper study of psychology.[1] 'Whether it be or be not a true saying,' he writes, 'that mythology is a disease of language, it may be said with truth that metaphysics, in all its anti-realistic developments, is a disease of language.' No doubt it is; but think of the consequences that flow from this view of language for a proper study of psychology! If a disease of language can produce such hallucinations as mythology and metaphysics, what then is the health of language, and what its bearing on the healthy functions of the mind?

[1] Spencer, *Principles of Psychology*, Vol. II. p. 502.

Is this no problem for the psychologist? Nervous or cerebral disorders occupy a large portion in every work on psychology; yet they are in their nature obscure, and must always remain so. Why a hardening or softening of the brain should interfere with thought will never be explained, beyond the fact that the wires are somehow damaged, and do not properly receive and convey the nervous currents. But what we call a disease of language is perfectly intelligible; nay, it has been proved to be natural, and almost inevitable. In a lecture delivered in this Institution some time ago, I endeavoured to show that mythology, in the widest sense of the word, is the power exercised by language on thought in every possible sphere of mental activity, including metaphysics as well as religion; and I called the whole history of philosophy, from Thales down to Hegel, one uninterrupted battle against mythology, a constant protest of thought against language. Not till we understand the real nature of language shall we understand the real nature of the human Self; and those who want to read the true history of the development of the soul of man, must learn to read it in language, the primeval and never-ending autobiography of our race.

In order to show the real bearing of the Philosophy of Language on the problem which occupies us at present, viz. the position of man in the animal world, it is absolutely necessary to go back to Hume and Kant. Nothing seems to me so much to be regretted in the philosophical discussions of our time as the neglect which is shown for the history of former struggles in which the same interests were at stake, and in which the same problems were discussed, not without leaving, one would have thought, something that is still worth remembering. A study of the history of philosophy cannot, at the present moment, be too strongly recommended, when one sees men of the highest eminence in their special spheres of study, approaching the old problems of mankind as if they had never been discussed before, and advancing opinions such as Sokrates would not have dared to place in the mouths of his antagonists. Even if a study of ancient philosophy, and particularly of Oriental philosophy, should appear too heavy a task, it seems at all events indispensable, that those who take an active part in the controversies on the theory of general evolution and development, as opposed to specific variety and a reign of law, should be familiar with the final results of that great debate which, about one hundred years ago, was carried on on very similar, nay, essentially the same topics, by such giants as Berkeley, Hume, and Kant. In the permanent philosophical parliament of the world there is, and there must be, an order of business. The representatives of the highest interests of mankind cannot be discussing all things at all times. At all events, if an old question is to be opened again, let it be opened in that form in which it was left at the end of the last debate.

In order to appreciate the full import of the questions now agitated by positivist and evolutionist philosophers, in order to understand their antecedents, and to do justice to their claims, we must go back to Hume and Kant. The position which Kant took and maintained against the materialist philosophy of Hume and the idealist philosophy of Berkeley, may be attacked afresh, but it cannot be, and it ought not to be, ignored. Kant's answer was not simply the answer of one German professor, it was a vote carried in a full house, and at the time accepted as decisive by the whole world.

The circumstances under which Kant wrote his *Criticism of Pure Reason* show that his success was due, not only to his own qualifications, great as they were, but to the fact that the tide of materialism was on the turn, that a reaction had set in in the minds of independent thinkers, so that, when he wrote his great and decisive work, he was but lending the most powerful expression to the silent convictions of the world's growing majority. Unless we keep this in view, the success of Kant's philosophy would be inexplicable. He was a Professor in a small university of Eastern Prussia. He had never been out of his native province, never but once out of his native town. He began to lecture at Königsberg as a *Privat-Docent* in 1755, just a year before the beginning of the Seven Years' War, when other questions rather, and not the certainty of synthetic judgments *à priori*, would seem to have interested the public mind of Germany. Kant worked on for sixteen years as an unpaid University lecturer; in 1766 he took a Librarianship which yielded him about 10*l.* a year, and it was not till he was forty-six years of age (1770) that he succeeded in obtaining a Professorship of Logic and Metaphysics with a salary of about 60*l.* a year. He lectured indefatigably on a great variety of subjects:—on Mathematics, Physics, Logic, Metaphysics, Natural Law, Morals, Natural Religion, Physical Geography, and Anthropology. He enjoyed a high reputation in his own University, but no more than many other professors in the numerous universities of Germany. His fame had certainly never spread beyond the academic circles of his own country, when in the year 1781, at the age of fifty-seven, he published at Riga his *Critik der reinen Vernunft* (*The Criticism of Pure Reason*), a work which in the onward stream of philosophic thought has stood, and will stand for ever, like the rocks of Niagara. There is nothing attractive in that book, nothing startling; far from it. It is badly written, in a heavy style, full of repetitions, all grey in grey, with hardly a single ray of light and sunshine from beginning to end. And yet that book soon became known all over Europe, at a time when literary intelligence travelled much more slowly than at present. Lectures were given in London on Kant's new system, even at Paris the philosopher of Königsberg became an authority, and for the first time in the history of human thought the philosophical phraseology of the age became German.

How is this to be explained? I believe simply by the fact that Kant spoke the word which the world had been waiting for. No philosopher, from Thales down to Hegel, has ever told, has ever taken and held his place in the history of philosophy, whose speculations, however abstruse in appearance, however far removed at first sight from the interests of ordinary mortals, have not answered some deep yearning in the hearts of his fellow-men. What makes a philosopher great, or, at all events, what makes him really powerful, is what soldiers would call his feeling for the main body of the army in its advance from truth to truth; his perfect understanding of the human solicitudes of his age, his sympathy with the historical progress of human thought. At the time of Kant's great triumph, the conclusions of Locke and Hume had remained unanswered for a long time, and seemed almost unanswerable. But for that very reason people longed for an answer. The problems which then disquieted not only philosophers, but all to whom their 'Being and Knowing' were matters of real concern, were not new problems. They were the old problems of the world, the questions

of the possibility of absolute certainty in the evidence of the senses, of reason, or of faith, the questions of the beginning and end of our existence, the question whether the Infinite is the shadow of a dream, or the substance of all substances. The same problems had exercised the sages of India, the thinkers of Greece, the students of Rome, the dreamers of Alexandria, the divines and scholars of the Middle Ages, the Realists and Nominalists, and again the schools of Descartes and Leibniz, in their conflict with the schools of Locke and Hume. But these old problems had in Kant's time, as in our own, assumed a new form and influence. If, in spite of its ever varying aspects, we may characterise the world-wide struggle by one word, as a struggle for the primacy between matter and mind, we can clearly see that in the middle of the last, as again in the middle of our own century, the materialistic view had gained the upper hand over the spiritualistic. Descartes, Malebranche, Leibniz, and Wolf might influence the opinions of hard-working students and independent thinkers, but their language was hardly understood by the busy world outside the lecture-rooms; while the writings of Locke, and still more those of Hume and his French followers, penetrated alike into boudoirs and club-rooms. Never, perhaps, in the whole history of philosophy did the pendulum of philosophic thought swing so violently as in the middle of the eighteenth century, from one extreme to the other, from Berkeley to Hume; never did pure spiritualism and pure materialism find such outspoken and uncompromising advocates as in the Bishop of Cloyne,—who considered it the height of absurdity to imagine any object as existing without, or independent of, that which alone will produce an object, viz. the subject,[2]—and the Librarian of the Advocates' Library at Edinburgh, who looked upon the conception of a subjective mind as a mere illusion, founded on nothing but on that succession of sensations to which we wrongly assign a sentient cause. But it is easy to see, in the literature of the age, that of these two solutions of the riddle of mind and matter, that which explained the mind as the mere outcome of matter, as the result of the impressions made on the senses, was far more in harmony with the general taste of the age than that which looked upon matter as the mere outcome of the mind. The former was regarded by the world as clever, the latter almost as silly.

That all-powerful, though most treacherous ally of philosophy, Common Sense, was stoutly opposed to Berkeley's idealism, and the typical representative of Common Sense, Dr. Samuel Johnson, maintained that he had only to strike his foot with characteristic force against a stone in order to convince the world that he had thoroughly refuted Berkeley and all idealists.[3] Voltaire, a less sincere believer in Common Sense, joked about ten thousand cannon balls and ten thousand dead men, being only ten thousand ideas; while Dean Swift is accused of having committed the sorry joke of keeping Bishop Berkeley, on a rainy day, waiting before his door, giving orders not to open it, because, he said, if his philosophy is true, he can as easily enter with the door shut as with the door open. Though at present philosophers are inclined to do more justice to Berkeley, yet they seldom speak of him without a suppressed smile, totally forgetting that the majority of real thinkers, nay, I should almost ven-

[2] *Berkeley's Works*, ed. Fraser, Vol. IV. p. 376.
[3] *Berkeley's Works*, Vol. IV. p. 368.

ture to say, the majority of mankind agree with Berkeley in looking upon the phenomenal or so-called real world as a mere mirage, as mere *Māyā*, or illusion of the thinking Self.

In the last century the current of public opinion—and we know how powerful, how overwhelming that current can be at times—had been decidedly in favour of materialism, when Kant stood forth to stem and to turn the tide. He came so exactly in the nick of time that one almost doubts whether the tide was turning, or whether he turned the tide. But what secures to Kant his position in the history of philosophy is, that he brought the battle back to that point where alone it could be decided, that he took up the thread in the philosophical woof of mankind at the very point where it threatened to ravel and to break. He wrote the whole of his *Criticism of Pure Reason* with constant reference to Berkeley and Hume; and what I blame in modern philosophers is that, if they wish to go back to the position maintained by Hume, they should attempt to do it without taking into account the work achieved by Kant. To do this is to commit a philosophical anachronism, it is tantamount to removing the questions which now occupy us, from that historical stage on which alone they can be authoritatively decided.

It has sometimes been supposed that the rapid success of Kant's philosophy was due to its being a philosophy of compromise, neither spiritualistic, like Berkeley's, nor materialistic, like Hume's. I look upon Kant's philosophy, not as a compromise, but as a reconciliation of spiritualism and materialism, or rather of idealism and realism. But whatever view we may take of Kant, it is quite clear that, at the time when he wrote, neither Berkeley's nor Hume's followers would have accepted his terms. It is true that Kant differed from Berkeley in admitting that the raw material of our sensations and thoughts is given to us, that we accept it from without, not from within. So far the realistic school might claim him as their own. But when Kant demonstrates that we are not merely passive recipients, that the conception of a purely passive recipient involves in fact an absurdity, that what is given us we accept on our own terms, these terms being the forms of *our* sensuous perception, and the categories of *our* mind, then the realist would see that the ground under his feet was no longer safe, and that his new ally was more dangerous than his old enemy.

Kant's chief object in writing the *Criticism of Pure Reason* was to determine, once for all, the organs and the limits of our knowledge; and therefore, instead of criticising, as was then the fashion, the results of our knowledge, whether in religion, or in history, or in science, he boldly went to the root of the matter, and subjected Reason, pure and simple, to his searching analysis. In doing this, he was certainly far more successful against Locke and Hume than against Berkeley. To call the human mind a *tabula rasa* was pure metaphor, it was mythology and nothing else. *Tabula rasa* means a tablet, smoothed and made ready to receive the impressions of the pencil (γραφεῖον). It makes very little difference whether the mind is called a *tabula rasa*, or a mirror, or wax, or anything else that the French call *impressionable*. Nor does it help us much if, instead of impressions, we speak of sensations, or states of consciousness, or manifestations. The question is, how these states of consciousness come to be, whether 'to know' is an active or a passive verb, whether there is a knowing Self, and what it is like. If we begin with states of consciousness as ultimate facts, no doubt Hume and his followers are unassailable. Nothing

can be more ingenious than the explanation of the process by which the primary impressions, by mere twisting and turning, develop at last into an intellect, the passive mirror growing into a conscious Self. The sensuous impressions, as they are succeeded by new impressions, are supposed to become fainter, and to settle down into what we call our memory. General ideas are explained as the inevitable result of repeated sensuous impressions. For instance, if we see a *green* leaf, the *green* sea, and a *green* bird, the leaf, the sea, and the bird leave each but one impression, while the impression of the green colour is repeated three times, and becomes therefore deeper, more permanent, more general. Again, if we see the leaf of an oak tree, of a fig tree, of a rose tree, or of any other plant or shrub, the peculiar outline of each individual leaf is more or less obliterated, and there remains, we are told, the general impression of a leaf. In the same manner, out of innumerable impressions of various trees arises the general impression of tree, out of the impressions of trees, shrubs, and herbs, the general impression of plant, of vegetative species, and at last of substance, animate or inanimate. In this manner it was supposed that the whole furniture of the human mind could be explained as the inevitable result of repeated sensuous impressions; and further, as these sensuous impressions, which make up the whole of what is called Mind, *are received by animals as well as by men*, it followed, as a matter of course, that the difference between the two was a difference of degree only, and that it was a mere question of time and circumstances for a man-like ape to develop into an ape-like man.

We have now reached a point where the intimate connection between Hume's philosophy and that of the Evolutionist school will begin to be perceived.

If Mr. Darwin is right, if man is either the lineal or lateral descendant of some lower animal, then all the discussions between Locke and Berkeley, between Hume and Kant, have become useless and antiquated. We all agree that animals receive their knowledge through the senses only; and if man was developed from a lower animal, the human mind, too, must have been developed from a lower animal mind. There would be an end to all further discussions: Kant, and all who follow him, would simply be out of court.

But have the followers of Mr. Darwin no misgivings that possibly Kant's conclusions may be so strong as to resist even the hypothesis of evolution? Do they consider it quite safe in their victorious advance to leave such a fortress as Kant has erected unnoticed in the rear? If no attempt had ever been made at answering Hume, there would be no harm in speaking again of the mind of man and the mind of animals as a *tabula rasa* on which impressions are made which faint, and spontaneously develop into conceptions and general ideas. They might revive the old watchword of Locke's school —though it is really much older than Locke[4]—'that there is nothing in the intellect that was not before in the senses,' forgetting how it had been silenced by the triumphant answer of Kant's small army, 'that there is nothing in the senses that was not at the same time in the intellect.' But when one has watched these shouts and countershouts, when one has seen the splendid feats of arms in the truly

[4] Locke, 1632–1704. In a letter from Sir T. Bodley to Sir F. Bacon, February 1607, we read: 'It being a maxim of all men's approving, in intellectu nihil est quod non prius fuit in sensu.'

historical battles of the world, then to be simply told that all this is *passé*, that we now possess evidence which Berkeley, Locke, and Kant did not possess, and which renders all their lucubrations unnecessary; that, man being the descendant of some lower animal, the development of the human mind out of the mind of animals, or out of no mind, is a mere question of time, is certainly enough to make one feel a little impatient.

It is not for one moment maintained that, because Kant had proved that sensations are not the only ingredients of our consciousness, the question of the development of the human mind out of mere sensations is never to be opened again. Far from it. Only, if it is to be opened again, it should be done with a full appreciation of the labours of those who have come before us; otherwise philosophy itself will fall back into a state of prehistoric savagery.

What, then, is that *tabula rasa*, which sounds so learned, and yet is mere verbal jugglery? Let us accept the metaphor, that the mind is like a smooth writing tablet with nothing on it or in it, and what can be clearer even then, than that the impressions made on it must be determined by the nature of such a tablet? Impressions made on wax are different from impressions made on sand or water, and impressions made on the human Self must likewise be determined by the nature of the recipient. We see, therefore, that the conditions under which each recipient is capable of receiving impressions, constitute at the same time the conditions or terms to which all impressions must submit, whether they be made on a *tabula rasa*, or on the human Self, or on anything else.

And here is the place where Kant broke through the phalanx of the sensualistic school. That without which no impressions on the human mind are possible or conceivable, constitutes, he would say, the *transcendental* side of our knowledge. What, according to Kant, is *transcendental* is generally identified with what other philosophers call *à priori* or subjective. But this is true in a very limited sense only. Kant does not mean by transcendental what is merely biographically, i.e. in each individual, or even palæontologically, i.e. in the history of the whole race of man, *à priori*. The *à priori* in these two senses has to be discovered by experimental and historical psychology, and Kant would probably have no objection whatever to any of the conclusions arrived at in this domain of research by the most advanced evolutionist. The *à priori* which Kant tries to discover is that which makes the two other *à priori*'s possible; it is the ontological *à priori*. Let all the irritations of the senses, let all the raw material of our sensuous perceptions be given, the fact of our not simply yielding to these inroads, but resisting them, accepting them, realising them, knowing them, all this shows a reacting and realising power in the Self. If anything is to be seen, or heard, or felt, or known by *us*, such as we are—and, I suppose, we are something—if all is not to end with disturbances of the retina, or vibrations of the tympanum, or ringing of the bells at the receiving stations of the brain, then what is to be perceived by *us*, must submit to the conditions of *our* perceiving, what is to be known by *us*, must accept the conditions of *our* knowing. This point is of so much importance for the solution, or, at all events, for the right apprehension of the problem with which we have to deal, that we must examine Kant's view on the origin and on the conditions of our knowledge a little more carefully.

According to Kant, then, there are, first of all, two fundamental or

inevitable conditions of all sensuous manifestations, viz. *Space* and *Time*. They are called by Kant pure intuitions, which means *à priori* forms to which all intuitions, if they are to become *our* intuitions, must submit. By no effort can we do away with these forms of phenomenal existence. If we are to become conscious of anything, whether we call it an impression, or a manifestation, or a phase, we must place all phenomena side by side, or *in space*; and we can accept them only as following each other in succession, or *in time*. If we wanted to make it still clearer, that Time and Space are subjective, or at all events determined by the Self, we might say that there can be no *There* without a *Here*, there can be no *Then* without a *Now*, and both the *Here* and the *Now* depend on us as recipients, as measurers, as perceivers.

Mr. Herbert Spencer brings three arguments against Kant's view, that Space and Time are *à priori* forms of our sensuous intuition. He says it is absolutely impossible to think that these forms of intuition belong to the *ego*, and not to the *non-ego*. Now Kant does not, according to the nature of his system, commit himself to any assertion that some such forms may not belong to the *non-ego*, the *Ding an sich*; he only maintains that we have no means of knowing it. That Kant's view is perfectly thinkable, is proved by Berkeley and most Idealists.

Secondly, Mr. H. Spencer argues that if Space and Time are forms of thought, they can never be thought of, since it is impossible for anything to be at once the form of thought and the matter of thought. Against this argument it must be remarked that Kant never takes Space and Time as forms of thought. He carefully guards against this view, and calls them 'reine Formen sinnlicher Anschauung' (pure forms of sensuous intuition). But even if this distinction between thought and intuition is eliminated by evolution, it remains still to be proved that the forms of thought can never become the matter of thought. The greater part of philosophy makes the forms of thought the matter of thought.

Thirdly, Mr. Spencer maintains that some of our sense-perceptions, and more particularly that of hearing, are not necessarily localised. This objection again seems to me to rest on a misunderstanding. Though it is true that we do not always know the exact place where sounds come from, we always know, even in the case of our ear ringing, that what we perceive is outside, is somewhere, comes towards us; and that is all that Kant requires.

But besides these fundamental forms of sensuous intuition, Space and Time, without which no sensuous perception is possible, Kant, by his analysis of Pure Reason, discovered other conditions of our knowledge, the so-called *Categories of the Intellect*. While the sensualistic school, beginning with the ordinary *à priori* of experience, looked upon these forms of thought as mere abstractions, the residue or shadow of repeated observations, Kant made it clear that without them no experience, not even the lowest, would be possible, and that therefore they could not themselves be acquired by experience. Grant, he would say, that we have, we do not know how, the sensations of colour, sound, taste, smell, or touch. They are given, and we must accept them. But think of the enormous difference between a vibration and a sensation; and again between a succession or agglomeration of the sensations of yellowness, softness, sweetness, and roundness, and what we mean when we speak of an orange! The nerves may vibrate for ever—what would that be to us?

The sensations might rush in for ever through the different gates of our senses, the afferent nerves might deliver them to one central point, yet even then they would remain but so many excitations of nervous action, so many sensations, coming and going at pleasure, but they would never by themselves alone produce in us the perception of an orange. The common-sense view of the matter is that we perceive all these sensations together as an orange, because the orange, as such, exists without us as something substantial, and the qualities of yellowness, softness, sweetness, and roundness are inherent in it. This is, no doubt, very unphilosophical, and ignores the positive fact that all that we have consists and can consist only of sensations and phases of consciousness, and that nothing can ever carry us beyond. Yet there is this foundation of truth in the common-sense view, that it shows our utter inability of perceiving any sensations without referring them to something substantial which causes them, and is supposed to possess all those qualities which correspond to our sensations. But if we once know that what is given us consists only of phases of sensation, whatever their origin may be, it then becomes clear that it can only be our Self, or whatever else we like to call it, which adds all the rest, and does this, not consciously or deliberately, but of necessity, and, as it were, in the dark.

We cannot receive sensations without at once referring them to a substantial cause. To say that these sensations may have no origin at all, would be to commit an outrage against ourselves. And why? Simply because our mind is so constituted that to doubt whether anything phenomenal had a cause would be a logical suicide. Call it what you like, a law, a necessity, an unconscious instinct, a category of the understanding, it always remains the *fault* of our Self, that it cannot receive sensations without referring them to a substance of which they are supposed to tell us the attributes.[5] And if this is so, we have a clear right to say with Kant, that that without which even the lowest perception of an object is impossible must be given, and cannot have been acquired by repeated perception. The premiss in this argument, viz. that what we mean by cause has no warrant in the Non-ego, is indeed accepted, not only by Kant, but also by Hume; nay, there can be no doubt that on this point Kant owed very much to Hume's scepticism. Kant has nothing to say against Hume's argumentation that the ideas of *cause* and *effect*, of *substance* and *quality*, in that sense in which we use them, are not found in actual experience. But while Hume proceeded to discard those ideas as mere illusions, Kant, on the contrary, reclaimed them as the inevitable forms to which all phenomena must submit, if they are to be phenomena, if they are to become *our* phenomena, the perceptions of a human Self. He established their truth, or, what with him is the same, their inevitability in all phenomenal knowledge, and by showing their inapplicability to any but phenomenal knowledge, he once for all determined the limits of what is knowable and what is not.

These inevitable forms were reduced by Kant to twelve, and he arranged them systematically in his famous Table of Categories:—

---

[5] Cf. Bacon, *Nov. Org.* I. 41. 'Omnes perceptiones, tam Sensus quam Mentis, sunt ex analogia Hominis, non ex analogia universi. Estque Intellectus humanus instar speculi inaequalis ad radios rerum, qui suam naturam Naturae rerum immiscet, *eamque distorquet et inficit*.'—Liebmann, *Kant*, p. 48.

(1) *Unity, Plurality, Universality;*
(2) *Affirmation, Negation, Limitation;*
(3) *Substantiality, Causality, Reciprocity;*
(4) *Possibility, Reality, Necessity.*

There is no time, I am afraid, to examine the true character of these categories in detail, or the forms which they take as *schemata*. What applies to one applies to all, viz. that without them no thought is possible. Take the categories of *quantity*, and try to think of anything without thinking of it at the same time as one or many, and you will find it is impossible. Nature does not count for us, we must count ourselves, and the talent of counting cannot have been acquired by counting, any more than a stone acquires the talent of swimming by being thrown into the water.

Put in the shortest way, I should say that the result of Kant's analysis of the Categories of the Understanding is, '*Nihil est in sensu, quod non fuerit in intellectu.*' We cannot perceive any object, except by the aid of the intellect.

It is not easy to give in a few words a true abstract of Kant's philosophy, yet if we wish to gain a clear view of the progressive, or, it may be, retrogressive, movement of human thought from century to century, we must be satisfied with short abstracts, as long as they contain the essence of each system of philosophy. We may spend years in exploring the course of a river, and we may have in our note-books accurate sketches of its borders, of every nook and corner through which it winds. But for practical purposes we want a geographical map, more or less minute, according to the extent of the area which we wish to survey; and here the meandering outline of the river must vanish, and be replaced by a bold line, indicating the general direction of the river from one important point to another, and nothing else. The same is necessary if we draw, either for our own guidance or for the guidance of others, a map of the streams of philosophic thought. Whole pages, nay, whole volumes, must here be represented by one or two lines, and all that is essential is that we should not lose sight of the salient points in each system. It has been said that every system of philosophy lies in a nutshell, and this is particularly true of great and decisive systems. They do not wander about much; they go straight to the point. What is really characteristic in them is the attitude which the philosopher assumes towards the old problems of the world: that attitude once understood, and everything else follows almost by necessity. In the philosophy of Kant two streams of philosophic thought, which had been running in separate beds for ages, meet for the first time, and we can clearly discover in his system the gradual mingling of the colours of Hume and Berkeley. Turning against the one-sided course of Hume's philosophy, Kant shows that there is something in our intellect which could never have been supplied by mere sensations; turning against Berkeley, he shows that there is something in our sensations which could never have been supplied by mere intellect. He maintains that Hume's sensations and Berkeley's intellect exist for each other, depend on each other, presuppose each other, form together a whole that should never have been torn asunder. And he likewise shows that the two factors of our knowledge, the matter of our sensations on one side, and their form on the other, are correlative, and that any attempt at using the forms of our intellect on anything which transcends the limits of our sensations is illegal. Hence his famous saying, *Begriffe ohne Anschauungen sind leer, Anschauungen ohne Begriffe*

sind blind. ('Conceptions without Intuitions are empty, Intuitions without Conceptions are blind.') This last protest against the use of the categories with regard to anything not supplied by the senses, is the crowning effort of Kant's philosophy, but, strange to say, it is a protest unheeded by almost all philosophers who follow after Kant. To my mind Kant's general solution of the problem which divided Hume and Berkeley is perfect; and however we may criticise the exact number of the inevitable forms of thought, his Table of Categories as a whole will for ever remain the Magna Charta of true philosophy.

In Germany, although Kant's system has been succeeded by other systems, his reply to Hume has never been challenged by any leading philosopher. It has been strengthened rather than weakened by subsequent systems which, though widely differing from Kant in their metaphysical conceptions, never questioned his success in vindicating certain ingredients of our knowledge as belonging to mind, not to matter; to the subject, not to the object; to the understanding, not to sensation; to the *à priori*, not to experience. They have disregarded Kant's warning that *à priori* laws of thought must not be applied to anything outside the limits of sensuous experience, but they have never questioned the true *à priori* character of those laws themselves.

Nor can it be said that in France the step which Kant had made in advance of Hume has ever been retraced by those who represent in that country the historical progress of philosophy. One French philosopher only, whose position is in many respects anomalous, Auguste Comte, has ventured to propose a system of philosophy in which Kant's position is not indeed refuted, but ignored. Comte did not know Kant's philosophy, and I do not think that it will be ascribed to any national prejudice of mine if I consider that this alone would be sufficient to exclude his name from the historical roll of philosophers. I should say just the same of Kant if he had written in ignorance of Locke and Hume and Berkeley, or of Spinoza if he had ignored the works of Descartes, or of Aristotle if he had ignored the teaching of Plato.

It is different, however, in England. Here a new school of British philosophy has sprung up, not entirely free, perhaps, from the influence of Comte, but supported by far greater learning, and real philosophical power—a school which deliberately denies the correctness of Kant's analysis, and falls back in the main on the position once occupied by Locke or Hume. This same school has lately met with very powerful support in Germany, and it might seem almost as if the work achieved by Kant was at last to be undone in his own country. These modern philosophers do not ignore Kant, but in returning to the standpoint of Locke or Hume, they distinctly assert that Kant has not made good his case, whether in his analysis of the two feeders of knowledge, or in his admission of general truths, not attained and not attainable by experience. The law of causality on which the whole question of the *à priori* conditions of knowledge may be said to hinge, is treated again, as it was by Hume, as a mere illusion, produced by the repeated succession of events; and psychological analysis, strengthened by physiological research, is called in to prove that mind is but the transient outcome of matter, that the brain secretes thought as the liver secretes bile. No phosphorus, no thought! is the triumphant war-cry of this school.

In speaking of the general tendencies of this school of thought, I

have intentionally avoided mentioning any names, for it is curious to observe that hardly any two representatives of it agree even on the most essential points. No two names, for instance, are so frequently quoted together as representatives of modern English thought, as Mr. Stuart Mill and Mr. Herbert Spencer, yet on the most critical point they are as diametrically opposed as Hume and Kant. Mr. Stuart Mill admits nothing *à priori* in the human mind; he stands on the same point as Locke, nay, if I interpret some of his paragraphs rightly, he goes as far as Hume. Mr. Herbert Spencer, on the contrary, fights against this view of the human intellect with the same sharp weapon that Kant had used against them, and he arrives, like Kant, at the conclusion that there is in the human mind, such as we know it, something *à priori*, call it intuitions, categories, innate ideas or congenital dispositions, something at all events that cannot honestly be explained as the result of individual experience. Whether the prehistoric genesis of these congenital dispositions or inherited necessities of thought, as suggested by Mr. Herbert Spencer, be right or wrong, does not signify for the purpose which Kant had in view. In admitting that there is something in our mind, which is not the result of our own *à posteriori* experience, Mr. Herbert Spencer is a thorough Kantian, and we shall see that he is a Kantian in other respects too. If it could be proved that nervous modifications, accumulated from generation to generation, could result in nervous structures that are fixed in proportion as the outer relations to which they answer are fixed, we, as followers of Kant, should only have to put in the place of Kant's intuitions of Space and Time, 'the constant space relations, expressed in definite nervous structures, congenitally framed to act in definite ways, and incapable of acting in any other way.' If Mr. Herbert Spencer had not misunderstood the exact meaning of what Kant calls the intuitions of Space and Time, he would have perceived that, barring his theory of the prehistoric origin of these intuitions, he was quite at one with Kant.

Some of the objections which Mr. Herbert Spencer urges against Kant's theory of innate intuitions of Space and Time were made so soon after the appearance of his work, that Kant himself was still able to reply to them.[6] Thus he explains himself that by intuitions he does not mean anything innate in the form of ready-made ideas or images, but merely passive states or receptivities of the Ego, according to which, if affected in certain ways, it has certain forms in which it represents these affections, and that what is innate is not the representation itself, but simply the first formal cause of its possibility.'

Nor do I think that Kant's view of causality, as one of the most important categories of the understanding, has been correctly apprehended by his English critics. All the arguments that are brought forward by the living followers of Hume, in order to show that the idea of cause is not an innate idea, but the result of repeated observations, and, it may be, a mere illusion, do not touch Kant at all. He moves in quite a different layer of thought. That each individual becomes conscious of causality by experience and education, he knows as well as the most determined follower of Hume; but what he means by the category of causality is something totally different. It is an unconscious process which, from a purely psychological

[6] See *Das Unbewusste*, p. 187, Kant's *Werke*, ed. Rosenkranz, B. 1, pp. 445, 446.

point of view, might truly be called prehistoric. So far from being the result of repeated observations, Kant shows that what he means by the category of causality is the *sine quâ non* of the simplest perception, and that without it we might indeed have states of feeling, but never a sensation of *something*, an intuition of *an object*, or a perception of *a substance*. Were we to accept the theory of evolution which traces the human mind back to the inner life of a mollusc, we should even then be able to remain Kantians, in so far as it would be, even then, the category of causality that works in the mollusc, and makes it extend its tentacles towards the crumb of bread which has touched it, and has evoked in it a reflex action, a grasping after the prey. In this lowest form of animal life, therefore, the category of causality, if we may use such a term, would show itself simply as conscious, or, at all events, as no longer involuntary, reaction; in human life, it shows itself in the first glance of recognition that lights up the infant's vacant stare.

This is what Kant means by the category of causality, and no new discoveries, either in the structure of the organs of sense or in the working of the mental faculties, have in any way, so far as I can see, invalidated his conclusions that that category, at all events, whatever we may think of the others, is *à priori* in every sense of the word.

Among German philosophers there is none so free from what are called German metaphysical tendencies as Schopenhauer, yet what does he say of Kant's view of causality?

'Sensation,' he says, 'is something essentially subjective, and its changes are brought to our cognisance in the form of the internal sense only, therefore in time, i.e. in succession.[7] The understanding, through a form belonging to it and to it alone, viz. the form of causality, takes hold of the given sensations, *à priori*, previous to all experience (for experience is not yet possible), as effects which, as such, must have a cause; and through another form of the internal sense, viz. that of space, which is likewise pre-established in the intellect, it places that cause outside the organs of sense.' And again: 'As the visible world rises before us with the rising of the sun, the understanding, by its one simple function of referring all effects to a cause, changes with one stroke all dull and unmeaning sensations into intuitions. What is felt by the eye, the ear, the hand, is not intuition, but only the *data* of intuition. Only by the step which the understanding makes from effect to cause, the world is made, as intuition, extended in space, changing in form, permanent in substance; for it is the understanding which combines Space and Time in the conception of matter, that is, of activity or force.'

Professor Helmholtz, again, who has analysed the external apparatus of the senses more minutely than any other philosopher, and who, in England, and, at all events, in this Institution, would not be denied the name of a philosopher, arrives, though starting from a different point, at identically the same result as Schopenhauer.

'It is clear,' he says, 'that starting with the world of our sensations, we could never arrive at the conception of an external world, except by admitting, from the changing of our sensations, the existence of external objects as the causes of change; though it is perfectly true that, after the conception of such objects has once been formed, we are hardly aware how we came to have this conception;

[7] Liebmann, *Objectiver Anblick*, p. 114.

because the conclusion is so self-evident that we do not look upon it as the result of a conclusion. We must admit, therefore, that the law of causality, by which from an effect we infer the existence of a cause, is to be recognised as *a law of our intellect, preceding all experience.* We cannot arrive at any experience of natural objects without having the law of causality acting within us; it is impossible, therefore, to admit that this law of causality is derived from experience.'

Strengthened by such support from opposite quarters, we may sum up Kant's argument in favour of the transcendental or *à priori* character of this and the other categories in this short sentence:

'That without which no experience, not even the simplest perception of a stone or a tree, is possible, cannot be the result of repeated perceptions.'

There are those who speak of Kant's philosophy as cloudy German metaphysics, but I doubt whether they have any idea of the real character of his philosophy. No one had dealt such heavy blows to what is meant by German metaphysics as Kant; no one has drawn so sharp a line between the Knowable and the Unknowable; no one, I believe, at the present critical moment, deserves such careful study as Kant. When I watch, as far as I am able, the philosophical controversies in England and Germany, I feel very strongly how much might be gained on both sides by a more frequent exchange of thought. Philosophy was far more international in the days of Leibniz and Newton, and again in the days of Kant and Hume; and much mental energy seems wasted by this absence of a mutual understanding between the leaders of philosophic thought in England, Germany, France, and Italy. It is painful to read the sweeping condemnation of German metaphysics, and still more to see a man like Kant lectured like a schoolboy. One may differ from Kant, as one differs from Plato or Aristotle, but those who know Kant's writings, and the influence which he has exercised on the history of philosophy, would always speak of him with respect.

The blame, however, does not attach to the English side only. There are many philosophers in Germany who think that, since the days of Hume, there has been no philosophy in England, and who imagine they may safely ignore the great work that has been achieved by the living representatives of British philosophy. I confess that I almost shuddered when in a work by an eminent German professor of Strassburg, I saw the most advanced thinker of England, a mind of the future rather than of the present, spoken of as—*antediluvian.* That antediluvian philosopher is Mr. John Stuart Mill. Antediluvian, however, was meant only for Ante-Kantian, and in that sense Mr. Stuart Mill would probably gladly accept the name.

Yet, such things ought not to be: if nationality must still narrow our sympathies in other spheres of thought, surely philosophy ought to stand on a loftier pinnacle.

FRASER'S MAGAZINE.

JUNE 1873.

LECTURES ON MR. DARWIN'S PHILOSOPHY OF LANGUAGE.

By Professor Max Müller.

SECOND LECTURE,

Delivered at the Royal Institution, March 29, 1873.

IF we want to understand the history of the Norman Conquest, the Reformation, the French Revolution, or any other great crisis in the political, religious, and social state of the world, we know that we must study the history of the times immediately preceding those momentous changes. Nor shall we ever understand the real character of a great philosophical crisis unless we have made ourselves thoroughly familiar with its antecedents. Without going so far as Hegel, who saw in the whole history of philosophy an unbroken dialectic evolution, it is easy to see that there certainly is a greater continuity in the history of philosophic thought than in the history of politics, and it therefore seemed to me essential to dwell in my first Lecture on the exact stage which the philosophical struggle of our century had reached before Mr. Darwin's publications appeared, in order to enable us to appreciate fully his historical position, not only as an eminent physiologist, but as the restorer of that great empire in the world of thought which claims as its founders the glorious names of Locke and Hume. It might indeed be said of Mr. Darwin what was once said of the restorer of another empire, 'Il n'est pas parvenu, il est arrivé.' The philosophical empire of Locke and Hume had fallen under the blows of Kant's *Criticism of Pure Reason*. But the successors of Kant—Fichte, Schelling, and Hegel—disregarding the checks by which Kant had so carefully defined the legitimate exercise of the rights of Pure Reason, indulged in such flights of transcendent fancy, that a reaction became inevitable. First came the violent protest of Schopenhauer, and his exhortation to return to the old fundamental principles of Kant's philosophy. These, owing to their very violence, passed unheeded. Then followed a complete disorganisation of philosophic thought, and this led in the end to a desperate attempt to restore the old dynasty of Locke and Hume. During the years immediately preceding the publication of Darwin's *Origin of Species* (1860) and his *Descent of Man*, the old problems which had been discussed in the days of Berkeley, Hume, and Kant, turned up again in full force. We had to read again that sensuous impressions were the sole constituent elements of the human intellect; that general ideas were all developed sponta-

neously from single impressions; that the only difference between sensations and ideas was the faintness of the latter; that what we mean by substance is only a collection of particular ideas, united by imagination, and comprehended by a particular name;[1] and that what we are pleased to call our mind, is but a delusion, though who the deluder is and who the deluded, would seem to be a question too indiscreet to ask.

But the principal assault in this struggle came from a new quarter. It was not to be the old battle over again, we were told; but the fight was to be carried on with modern and irresistible weapons. The new philosophy, priding itself, as all philosophies have done, on its positive character, professed to despise the endless argumentations of the schools, and to appeal for evidence to matter of fact only. Our mind, whether consisting of material impressions or intellectual concepts, was now to be submitted to the dissecting knife and the microscope. We were shown the nervous tubes, afferent and efferent, through which the shocks from without pass on to the sensitive and motive cells; the commissural tubes holding these cells together were laid bare before us; the exact place in the brain was pointed out where the messages from without were delivered; and it seemed as if nothing were wanting but a more powerful lens to enable us to see with our own eyes how, in the workshop of the brain, as in a photographic apparatus, the pictures of the senses and the ideas of the intellect were being turned out in endless variety.

And this was not all. The old stories about the reasoning of animals, so powerfully handled in the school of Hume, were brought out again. Innumerable anecdotes that had been told from the time of Aelian to the days of Reimarus, were told once more, in order to show that the intellect of animals did not only match, but that in many cases it transcended the powers of the human intellect. One might have imagined oneself living again in the days of La Mettrie, who, after having published his work, *Man, a Machine*, followed it up by another work, *Brutes, more than Machines*. It is true there were some philosophers who protested energetically against reopening that question, which had been closed by common consent, and which certainly ought not to have been reopened by positive philosophers. For if there is a *terra incognita* which excludes all positive knowledge, it is the mind of animals. We may imagine anything we please about the inner life, the motives, the foresight, the feelings and aspirations of animals—we can *know* absolutely nothing. How little analogy can help us in interpreting their acts is best proved by the fact, that a philosopher like Descartes could bring himself to consider animals as mere machines, while Leibniz was unwilling to deny to them the possession of immortal souls. We need not wonder at such discrepancies, considering the nature of the evidence. What can we know of the inner life of a mollusc? We may imagine that it lives in total darkness, that it is hardly more than a mass of pulp; but we may equally well imagine that, being free from all the disturbances produced by the impressions of the senses, and out of the reach of all those causes of error to which man is liable, it may possess a much truer and deeper insight into the essence of the Absolute, a much fuller apprehension of eternal truths than the human soul. It may be so, or it may not be so, for there is no limit to an anthropomorphic interpretation of the life of animals. But

[1] Hume, *Treatise on Human Nature*, book i. sec. i. p. 33.

the tacit understanding, or rather the clear compromise, established among the philosophers of the last century, and declaring the old battle-field, on which so much useless ink had been shed over the question of the intellect of animals, to be for ever neutralised, ought hardly to have been disturbed, least of all by those who profess to trust in nothing but positive fact.

Nor do I think that philosophers would have allowed the reopening of the flood-gates of animal anthropomorphism, if it had not been for the simultaneous rise of Mr. Darwin's theories. If it can be proved that man derives his origin genealogically, and, in the widest sense of the word, historically, from some lower animal, it is useless to say another word on the mind of man being different from the mind of animals. The two are identical, and no argument would be required any longer to support Hume's opinions; they would henceforth rest on positive facts. This shows the immense importance of Mr. Darwin's speculations in solving, once for all, by evidence that admits of no demurrer, the long-pending questions between man and animal, and, in its further consequences, between mind and matter, between spiritualism and materialism, between Berkeley and Hume; and it shows at the same time that the final verdict on his philosophy must be signed, not by zoologists and physiologists only, but by psychologists also, nay, it may be, by German metaphysicians.

Few men who are not zoologists and physiologists by profession can have read Mr. Darwin's books *On the Origin of Species* and *On the Descent of Man* with deeper interest than I have, and with a more intense admiration of his originality, independence, and honesty of thought. I know of few books so useful to the student of the Science of Language, in teaching him the true method for discovering similarity beneath diversity, the general behind the individual, the essential hidden by the accidental; and helping him to understand the possibility of change by natural means. There may be gaps and flaws in the genealogical pedigree of organic life, as drawn by Mr. Darwin and his followers; there may be or there may not be a possibility of resisting their arguments when, beginning with a group of animals, boldly called 'organisms without organs,'[2] such as the *Bathybius Haeckelii*, they advance step by step to the crown and summit of the animal kingdom, and to the *primus inter primates*, man.

This is a point to be settled by physiologists; and if Carl Vogt may be accepted as their recognised representative and spokesman, the question would seem to be settled, at least so far as the savants of Europe are concerned. 'No one,' he says, 'at least in Europe, dares any longer to maintain the independent and complete creation of species.'[3] The reservation, 'at least in Europe,' is meant, as is well known, for Agassiz in America, who still holds out, and is bold enough to teach, 'that the different species of the animal kingdom furnish an unexpected proof that the whole plan of creation was maturely weighed and fixed, long before it was carried out.'[4] Professor Haeckel, however, the fiery apostle of Darwinism in Germany, speaks more diffidently on the subject. In his last work on *Kalkschwämme* (p. xii.), just published, he writes: 'The majority,

---

Haeckel, *Natürliche Schöpfungsgeschichte*, p. 165.

'Personne, en Europe au moins, n'ose plus soutenir la création indépendante et de toutes pièces des espèces.' Quoted by Darwin, in his *Descent of Man*, vol. i. p. 1.

See Durand, *Origines*, pp. 77, 78.

and among it some famous biologists of the first class, are still of opinion that the problem of the origin of species has only been reopened by Darwin, but by no means solved.'

But, however that may be, and whatever modification Mr. Darwin's system may receive at the hands of professed physiologists, the honour of having cleared the Augean stable of endless species, of having explained many things which formerly seemed to require the interference of direct creation, by the slow action of natural causes, of having made us see the influence exercised by the individual on the family, and by the family on the individual, of having given us, in fact, a few really new and fresh ideas, will always remain his own.

In saying this, however, I do not wish to imply assent to Mr. Darwin's views on the development of all species; I only wish to say that, in the presence of such high authorities, one ought to refrain from expressing an opinion, and be satisfied to wait. I am old enough to remember the equally authoritative statements of the most eminent naturalists with regard to the races of man. When my own researches on language and the intellectual development of man led me to the conclusion that, if we had only sufficient time (some hundreds of thousands of years) allowed us, there would be no difficulty in giving an intelligible account of the common origin of all languages, I was met with the assurance that, even hypothetically, such a view was impossible, because the merest tyro in anatomy knew that the different races of man constituted so many species, that species were the result of independent creative acts, and that the black, brown, red, yellow, and white races could not possibly be conceived as descended from one source. Men like Prichard and Humboldt, who maintained the possibility of a common origin, were accused of being influenced by extraneous motives. I myself was charged with a superstitious belief in the Mosaic ethnology. And why? Simply because, in the Science of Language, I was a Darwinian before Darwin; simply because I had protested against scientific as strongly as against theological dogmatism; simply because I wished to see the question of the possibility of a common origin of languages treated, at least, as an open question.[5] And what has happened now? All the arguments about hybridity, infertility, local centres, permanent types, are swept away under the powerful broom of development, and we are told that not only the different varieties of man, but monkeys, horses, cats, and dogs, have all one, or at the utmost four progenitors; nay, that 'no living creature, in Europe at least, dares to affirm the independent creation of species.' Under these circumstances it seems but fair to follow the old Greek rule of abstaining, and to wait whether in the progress of physical research the arguments of the evolutionists will really remain unanswerable and unanswered.

The two points where the system of Mr. Darwin, and more particularly of his followers, seems most vulnerable to the general student, are the beginning and the end. With regard to the beginning of organic life, Mr. Darwin himself has exercised a wise discretion. He does not, as we saw, postulate one primordial form, nor has he ever attempted to explain the first beginnings of organic life. He is not responsible, therefore, for the theories of his disciples, who either

[5] *See* 'The Possibility of a Common Origin of Language,' in my letter to Bunsen 'On the Turanian Languages,' published in Bunsen's *Christianity and Mankind*, 1854.

try to bridge over the chasm between inorganic and organic bodies by mere 'Who knows?' or who fall back on scientific mythology; for to speak of self-generation is to speak mythologically.

Mr. Herbert Spencer writes thus in answer to Mr. Martineau, who had dwelt on the existence of this chasm between the living and the not-living as a fatal difficulty in the way of the general doctrine of evolution: 'Here, again, our ignorance is employed to play the part of knowledge: the fact that we do not know distinctly how an alleged transition has taken place, is transformed into the fact that no transition has taken place.'

The answer to this is clear. Why allege a transition, if we do not know anything about it? It is in alleging such a transition that we raise our ignorance to the rank of knowledge. We need not say that a transition is impossible, if impossible means inconceivable; but we ought not to say either that it is possible, unless we mean by possible no more than conceivable.

Mr. Spencer then continues: 'Merely noting this, however, I go on to remark that scientific discovery is day by day narrowing the chasm. Not many years since it was held as certain that chemical compounds distinguished as organic could not be formed artificially. Now, more than a thousand organic compounds have been formed artificially. Chemists have discovered the art of building them up from the simpler to the more complex; and do not doubt that they will eventually produce the most complex. Moreover, the phenomena attending isomeric change give a clue to those movements which are the only indications we have of life in its lowest forms. In various colloidal substances, including the albumenoid, isomeric change is accompanied by contraction or expansion, and consequent motion; and in such primordial types as the *Protogenes* of Haeckel, which do not differ in appearance from minute portions of albumen, the observed motions are comprehensible as accompanying isomeric changes caused by variations in surrounding physical actions. The probability of this interpretation will be seen on remembering the evidence we have, that in the higher organisms the functions are essentially effected by isomeric changes from one to another of the multitudinous forms which protein assumes.'

This is, no doubt, very able pleading on the part of an advocate, but I doubt whether it would convince Mr. Spencer himself, as a judge. I see no narrowing of the chasm between inorganic and organic bodies, because certain substances, called organic, have lately been built up in the laboratory. These so-called organic substances are not living bodies, but simply the secretions of living bodies. The question was not, whether we can imitate some of the productions turned out of the laboratory of a living body, but whether we can build up a living body.

Secondly, unless Mr. Spencer is prepared to maintain that life is nothing but isomeric change, the mere fact that there is an apparent similarity between the movements of the lowest of living bodies and the expansion and contraction produced in not-living substances by isomeric change, carries no weight. Even though the movements of the *Protogenes Haeckelii* were in appearance the same as those produced in chemical substances by isomeric change, no one knows better than Mr. Spencer, that life is not merely movement, but that it involves assimilation, oxidation and reproduction, at least reproduction by fission. No chemist has yet produced albumen, much less a *moneres*; and till that is done we

have as much right to protest against the hypothetical admission of a transition from no-life into life as Mr. Spencer would have to protest against the assertion that such a transition is impossible.

By the frequent repetition of such words as *generatio spontanea*, *autogony*, *plasmogony*, *Urzeugung*, and all the rest, we get accustomed to the sound of these words, and at last imagine that they can be translated into thought. But the Science of Language teaches us that it is always dangerous to do violence to words. Self-generation is self-contradictory; for as long as we use generation in its original sense, it is impossible that the object of generation should be the same as the subject. Why, therefore, use the word generation? We should never venture to say that a man was his own father or his own son; and if anyone believes that the production of life is possible by means of purely mechanical combinations, a new word should be coined for this new idea. What is really intended, is a complete reformation of the two concepts of organic and inorganic substance, of lifeless and living bodies. The two are no longer to be considered as mutually exclusive, but as co-ordinate, and both subordinate to some higher concept. Life may hereafter be discovered as the result of a chemical combination[6] of given substances; a peculiar mode of force or being, dependent on ascertainable conditions, and analogous to heat and electricity. Or it may be proved that millions of years ago the chemical state of the earth was different, and that what is impossible now in our laboratories was possible then in the primeval laboratory of nature. But, for the present, it seems to me a violation of the fundamental laws of scientific research, were we to use such an hypothesis as a real explanation of the problem of life, or were we to attempt to use *autogony* as a real word. The origin of life is as unknown to us as it was to Zoroaster, Moses, or Vasish*tha*; and Mr. Darwin shows a truly Kantian spirit in abstaining from any expression of opinion on this old riddle of the world.

But while with regard to the first point, viz. the beginning of life, Mr. Darwin would seem to hold a neutral position, we shall see that with regard to the second point, viz. the development of some higher animal into man, Mr. Darwin is responsible himself. He feels convinced that, if not lineally, at all events laterally, man is the descendant of an ape. Much stress has lately been laid on this, as a kind of salve to our wounded pride, that man need not consider himself as the lineal descendant of any living kind of ape.[7] We might, indeed, if we had any feelings of reverence for our ancestors, hope to discover their fossil bones in the tertiary strata of Southern Asia and Africa, but we need not be afraid of ever meeting them face to face, even in a South African congregation. I confess I do not see that this constitutes any real difference, nay, the statement that man is *only* laterally, not lineally, descended from a catarrhine ape, seems to me to rest on a complete confusion of thought.

Supposing the first ancestor of all living beings to have been a *Moneres*, as Haeckel tells us, and that this moneres developed into an *Amœba*, and that the Amœba, after passing through sixteen[8] more stages of animal life, emerged as a *Prosimia*, a half-ape, which Prosimia became a *Menocerca*, or tailed ape, then an *Anthropoid* ape, like the gorilla, then a *Pithecanthropus* or an ape-man, till at last the ape-man (a

[6] Strauss, p. 171. [7] Haeckel, p. 577.
[8] Ib. p. 578.

purely mythological being) begat a man; surely, in that case, man is the lineal descendant of an ape, though his first ancestor was the small speck of protoplasm, called a Moneres, that has not yet reached even the dignity of a cell.[9] The admission of hundreds and thousands of intermediate links between the gorilla and man would not make the smallest difference, as long as the genealogical continuity is not broken. Even if we represented to ourselves the genealogical tree of the animal family as a real tree, sending out by gemmation leaves and branches, representing the different species of animals from the amœba to the ape, and developing its leader into man, we should gain nothing; for if the primordial moneres is our common ancestor, all his descendants are brothers; all have, strictly speaking, some molecule of that living substance which existed in the first living individual; all are liable, therefore, to the capricious working of an unsuspected atavism.

Nor do I see any necessity for softening the true aspect of Darwin's theory, or disguising its consequences. The question is not whether the belief that animals so distant as a man, a monkey, an elephant, and a humming bird, a snake, a frog, and a fish could all have sprung from the same parents is monstrous;[10] but simply and solely, whether it is true. If it is true, we shall soon learn to digest it. Appeals to the pride or humility of man, to scientific courage or religious piety, are all equally out of place. If it could be proved that our bodily *habitat* had not been created in all its perfection from the first, but had been allowed to develop for ages before it became fit to hold a human soul, should we have any right to complain? Do we complain of the injustice or indignity of our having individually to be born or to die? of our passing through the different stages of embryonic life, of our being made of dust, that is, of exactly the same chemical materials from which the bodies of animals are built up? Fact against fact, argument against argument, that is the rule of scientific warfare, a warfare in which to confess oneself convinced or vanquished by truth is often far more honourable than victory.

But while protesting against these sentimental outcries, we ought not to allow ourselves to be intimidated by scientific clamour. It seems to me a mere dogmatic assertion to say[11] that it would be unscientific to consider the hand of a man or a monkey, the foot of a horse, the flipper of a seal, the wing of a bat, as having been formed on the same ideal plan! Even if 'their descent from a common progenitor, together with their adaptation to diversified conditions,' were proved by irrefragable evidence, the conception of an ideal plan would remain perfectly legitimate. If this one member could be so modified as to become in course of time a wing, a flipper, a hoof, or a hand, there is nothing unscientific, nothing unphilosophical in the idea that it may from the first have been intended for these later purposes and higher developments. Not every member has become a hand; and why? Three reasons only are admissible; either because there was for the hand a germ which, under all circumstances, would have developed into a hand, and into a hand only; or because there were outward circumstances which would have forced any member into the shape of a hand; or lastly, because there was from the beginning a correlation

[9] Haeckel, p. 168. [10] Darwin, *Descent*, vol. i. p. 203.
[11] *Descent*, vol. i. p. 32.

between that particular member and the circumstances to which it became adapted. I can understand the view of the evolutionist, who looks upon an organ as so much protoplasm, which, according to circumstances, might assume any conceivable form, and who treats all environing circumstances as facts requiring no explanation; but I am not prepared to say that Kant's view is unphilosophical when he says: 'Every change in a substance depends on its connection with and reciprocal action of other substances, and that *reciprocal action* cannot be explained, except through a Divine mind, as the common cause of both.'[12] At all events the conception that all these modifications in the ascending scale of animal life are the result of natural selection, transcends the horizon of our understanding quite as much as the conception that the whole creation was foreseen at once, and that what seems to us the result of adaptation through myriads of years, was seen as a whole from beginning to end by the wisdom and power of a creative Self. Both views are transcendent, both belong to the domain of faith; but if it were possible to measure the wonders of this universe by degrees, I confess that, to my mind, the self-evolution of a cell which contains within itself the power of becoming a man, or the admission of a protoplasm which in a given number of years would develop into a *homunculus* or a Shakespeare—nay, the mere formation of a *nucleus* which would change the moneres into an amœba, would far exceed in marvellousness all the speculations of Plato and the wonders of Genesis. The two extremes of scientific research and mythological speculation seem sometimes on the point of meeting; and when I listen to the language of the most advanced biologists, I almost imagine I am listening to one of the most ancient hymns of the Veda, and that we shall soon have to say again: 'In the beginning there was the golden egg.'

It is easy to understand that the Darwinian school, having brought itself to look upon the divers forms of living animals as the result of gradual development, should have considered it an act of intellectual cowardice to stop short before man. The gap between man and the higher apes is so very small, whereas the gap between the ape and the moneres is enormous. If, then, the latter could be cleared, how could we hesitate about the former? Few of those who have read Darwin or Haeckel could fail to feel the force of this appeal; and so far from showing a want of courage, those who resist it require really all the force of intellectual convictions to keep them from leaping with the rest. I cannot follow Mr. Darwin because I hold that this question is not to be decided in an anatomical theatre only. There is to my mind one difficulty which Mr. Darwin has not sufficiently appreciated, and which I certainly do not feel able to remove. There is between the whole animal kingdom on one side, and man, even in his lowest state, on the other, a barrier which no animal has ever crossed, and that barrier is—*Language*. By no effort of the understanding, by no stretch of imagination, can I explain to myself how language could have grown out of anything which animals possess, even if we granted them millions of years for that purpose. If anything has a right to the name of *specific difference*, it is language, as we find it in man, and in man only. Even if we removed the name of specific difference from our philosophic dictionaries, I should still hold that nothing de-

[12] Zeller, *Geschichte der Deutschen Philosophie*, p. 413.

serves the name of man except what is able to speak. If Mr. Mill[13] maintains that a rational elephant could not be called a man, all depends on what he means by rational. But it may certainly be said with equal, and even greater truth, that a speaking elephant or an elephantine speaker could never be called an elephant. I can bring myself to imagine with evolutionist philosophers that that most wonderful of organs, the eye, has been developed out of a pigmentary spot, and the ear out of a particularly sore place in the skin; that, in fact, an animal without any organs of sense may in time grow into an animal with organs of sense. I say I can imagine it, and I should not feel justified in classing such a theory as utterly inconceivable. But, taking all that is called animal on one side, and man on the other, I must call it inconceivable that any known animal could ever develop language. Professor Schleicher, though an enthusiastic admirer of Darwin, observed once jokingly, but not without a deep meaning, 'If a pig were ever to say to me, "I am a pig," it would *ipso facto* cease to be a pig.' This shows how strongly he felt that language was out of the reach of any animal, and the exclusive or specific property of man. I do not wonder that Mr. Darwin and other philosophers belonging to his school should not feel the difficulty of language as it was felt by Professor Schleicher, who, though a Darwinian, was also one of our best students of the Science of Language. But those who know best what language is, and, still more, what it presupposes, cannot, however Darwinian they may be on other points, ignore the *veto* which, as yet, that science enters against the last step in Darwin's philosophy. That philosophy would not be vitiated by admitting an independent beginning for man. For if Mr. Darwin admits, in opposition to the evolutionist *pur et simple*, four or five progenitors for the whole of the animal kingdom, which are most likely intended for the *Radiata*, *Mollusca*, *Articulata*, and *Vertebrata*, there would be nothing radically wrong in admitting a fifth progenitor for man. As Mr. Darwin does not admit this, but declares distinctly that man has been developed from some lower animal, we may conclude that *physiologically* and *anatomically* there are no tenable arguments against this view. But if Mr. Darwin goes on to say[14] that in a series of forms graduating *insensibly* from some ape-like creature to man as he now exists, it would be impossible to fix on any definite point where the term 'man' ought to be used, he has left the ground, peculiarly his own, where few would venture to oppose him, and he must expect to be met by those who have studied man, not only as an ape-like creature, which he undoubtedly is, but also as an un-ape-like creature, possessed of language, and of all that language implies.

My objections to the words of Mr. Darwin, which I have just quoted, are twofold: first, as to form; secondly, as to substance.

With regard to the form which Mr. Darwin has given to his argument, it need hardly be pointed out that he takes for granted in the premiss what is to be established in the conclusion. If there existed a series graduating *insensibly* from some ape-like creature to man, then, no doubt, the very fact that the graduation is *insensible* would preclude the possibility of fixing on any definite point where the animal ends and man begins. This, however, may be a mere slip of the pen, and might have been passed by unnoticed, if it were

[13] *Logic*, i. 38.

[14] I. 235.

not that the same kind of argument occurs not unfrequently in the works of Mr. Darwin and his followers. Whenever the distance between two points in the chain of creation seems too great, and there is no chance of finding the missing links, we are told again and again that we have only to imagine a large number of intermediate beings, insensibly sloping up or sloping down, in order to remove all difficulty. Whenever I meet with this line of reasoning, I cannot help thinking of an argument used by Hindu theologians in their endeavours to defend the possibility and the truth of Divine revelation. Their opponents say that between a Divine Being, who they admit is in possession of the truth, and human beings who are to receive the truth, there is a gulf which nothing can bridge over; and they go on to say that, admitting that Divine truth, as revealed, was perfect in the Revealer, yet the same Divine truth, as seen by human beings, must be liable to all the accidents of human frailty and fallibility. The orthodox Brahmans grow very angry at this, and, appealing to their sacred books, they maintain that there was between the Divine and the human a chain of intermediate beings, Rishis or seers, as they call them; that the first generation of these seers was, say, nine-tenths divine and one-tenth human; the second, eight-tenths divine and two-tenths human; the third, seven-tenths divine and three-tenths human; that each of these generations handed down revealed truth, till at last it reached the ninth generation, which was one-tenth divine and nine-tenths human, and by them was preached to ordinary mortals, being ten-tenths, or altogether human. In this way they feel convinced that the gulf between the Divine and the human is safely bridged over; and they might use the very words of Mr. Darwin, that in this series of forms graduating *insensibly* from the Divine to the human, it is impossible to fix on any definite point where the term 'man' ought to be used.

This old fallacy of first imagining a continuous scale, and then pointing out its indivisibility, affects more or less all systems of philosophy which wish to get rid of specific distinctions. That fallacy lurks in the word 'Development,' which is now so extensively used, but which requires very careful testing before it should be allowed to become a current coin in philosophical transactions. The admission of this insensible graduation would eliminate, not only the difference between ape and man, but likewise between black and white, hot and cold, a high and a low note in music: in fact, it would do away with the possibility of all exact and definite knowledge, by removing those wonderful lines and laws of nature which change the Chaos into a Kosmos, the Infinite into the Finite, and which enable us to count, to tell, and to know.

There have always been philosophers who have an eye for the Infinite only, who see All in One, and One in All. One of the greatest sages of antiquity, nay, of the whole world, Herakleitos (460 B.C.), summed up the experience of his life in the famous words, *πάντα χωρεῖ καὶ οὐδὲν μένει*, 'All is moving, and nothing is fixed,' or as we should say, 'All is growing, all is developing, all is evolving.' But this view of the universe was met, it may be by anticipation, by the followers of Pythagoras. When Pythagoras was asked what was the wisest of all things, he replied, 'Number,' and next to it, 'He who gave names to all things.' How should we translate this enigmatical saying? I believe, in modern philosophical language, it would run like this: 'True knowledge is im-

possible without definite generalisation or concepts (that is, number), and without definite signs for these concepts (that is, language).'

The Herakleitean view is now again in the ascendant. All is changing, all is developing, all is evolving. Ask any evolutionist philosopher whether he can conceive any two things so heterogeneous that, given a few millions of years and plenty of environment, the one cannot develop into the other, and I believe he will say, No. I do not argue here against this line of thought; on the contrary, I believe that in one sphere of mental aspirations it has its legitimate place. What I protest against is this, that in the sphere of exact knowledge we should allow ourselves to be deceived by inexact language. 'Insensible graduation' is self-contradictory. Translated into English, it means graduation without graduation, degrees without degrees, or something which is at the same time perceptible and imperceptible. Millions of years will never render the distance between two points, however near to each other, imperceptible. If the evolutionist philosopher asks for a few millions of years, the specialist philosopher asks for eyes that will magnify a few million times, and the Bank which supplies the one will readily supply the other. Exact science has nothing to do with insensible graduation. It counts thousands of vibrations that make our imperfect ears hear definite tones; it counts millions of vibrations that make our weak eyes see definite colours. It counts, it tells, it names, and then it knows; though it knows at the same time that beyond the thousands and beyond the millions of vibrations there is that which man can neither count, nor tell, nor name, nor know, the Unknown, the Unknowable—ay, the Divine.

But if we return to Mr. Darwin's argument, and simply leave out the word 'insensibly,' which begs the whole question, we shall then have to meet his statement, that in a series of forms graduating from some ape-like creature to man as he now is, it would be impossible to fix on any definite point where the term 'man' ought to be used. This statement I meet by a simple negative. Even admitting, for argument's sake, the existence of a series of beings intermediate between ape and man—a series which, as Mr. Darwin repeatedly states, does not exist[15]—I maintain that the point where the animal ends and man begins could be determined with absolute precision, for it would be coincident with the beginning of the Radical Period of language, with the first formation of a general idea embodied in the only form in which we find them embodied, viz. in the roots of our language.

Mr. Darwin was, of course, not unprepared for that answer. He remembered the old pun of Hobbes, *Homo animal rationale, quia orationale* (Man is a rational animal, because he is an orational animal), and he makes every effort in order to eliminate language as something unattainable by the animal, as something peculiar to man, as a specific difference between man and beast. In every book on Logic, language is quoted as the specific difference between man and all other beings. Thus we read in Stuart Mill's *Logic*:[16] 'The attribute of being capable of understanding a language is a *proprium* of the species man, since, without being connoted by the word, it follows from an attribute which the word does connote, viz. from the attribute of rationality.'

It is curious to observe how even Mr. Darwin seems, in some places, fully prepared to admit this. Thus he says in one passage,[17] 'Articulate

[15] *Descent*, i. p. 185. [16] Vol. i. p. 180. [17] I. p. 54.

language *is* peculiar to man.' In former days we could not have wished for a fuller admission, for *peculiar* then meant the same as *special*, something that constitutes a species, or something which belongs to a person in exclusion of others. But in a philosophy which looks upon all living beings as developed from four or five primordial cells, there can, in strict logic, exist four or five really and truly peculiar characters only, and therefore it is clear that peculiar, when used by Mr. Darwin, cannot mean what it would have meant if employed by others.

As if to soften the admission which he had made as to articulate language being peculiar to man, Mr. Darwin continues: 'But man uses, in common with the lower animals, inarticulate cries to express his meaning, aided by gestures, and the movements of the muscles of the face.' No one would deny this. There are many things besides, which man shares in common with animals. In fact, the discovery that man is an animal was not made yesterday, and no one seemed to be disturbed by that discovery. Man, however, was formerly called a '*rational animal*,' and the question is, whether he possesses anything peculiar to himself, or whether he represents only the highest form of perfection to which an animal, under favourable circumstances, may attain. Mr. Darwin dwells more fully on the same point, viz. on that kind of language which man shares in common with animals, when he says, 'This holds good, especially with the more simple and vivid feelings, which are but little connected with our higher intelligence. Our cries of pain, fear, surprise, anger, together with their appropriate actions, and the murmur of a mother to her beloved child, are more expressive than any words.'

No doubt they are. A tear is more expressive than a sigh, a sigh is more expressive than a speech, and silence itself is sometimes more eloquent than words. But all this is not language, in the true sense of the word.

Mr. Darwin himself feels, evidently, that he has not said all; he struggles manfully with the difficulties before him; nay, he really represents the case against himself as strongly as possible. 'It is not the mere power of articulation,' he continues, 'that distinguishes man from other animals, for, as everyone knows, parrots can talk; but it is his large power of connecting *definite sounds with definite ideas*.'

Here, then, we might again imagine that Mr. Darwin admitted all we want, viz. that some kind of language is peculiar to man, and distinguishes man from other animals; that, supposing man to be, up to a certain point, no more than an animal, he perceived that what made man to differ from all other animals was something nowhere to be found except in man, nowhere indicated even in the whole series of living beings, beginning with the *Bathybius Haeckelii*, and ending with the tailless ape. But, no; there follows immediately after, the finishing sentence, extorted rather, it seems to me, than naturally flowing from his pen, 'This obviously depends on the development of the mental faculties.'

What can be the meaning of this sentence? If it refers to the mental faculties of man, then no doubt it may be said to be obvious. But if it is meant to refer to the mental faculties of the gorilla, then, whether it be true or not, it is, at all events, so far from being obvious, that the very opposite might be called so—I mean the fact that no development of mental faculties has ever enabled one single animal to connect one single definite idea with one single definite word.

I confess that after reading again and again what Mr. Darwin has

written on the subject of language, I cannot understand how he could bring himself to sum up the subject as follows: 'We have seen that the faculty of articulate speech in itself does not offer any insuperable objection to the belief that man has been developed from some lower animal' (p. 62).

Now the fact is that not a single instance has ever been adduced of any animal trying or learning to speak, nor has it been explained by any scholar or philosopher how that barrier of language, which divides man from all animals, might be effectually crossed. I do not mean to say that there are no arguments which might be urged, either in favour of animals possessing the gift of language, but preferring not to use it,[18] or as tending to show that living beings, to use the words of Demokritos, speak naturally, and in the same manner in which they cough, sneeze, bellow, bark, or sigh. But Mr. Darwin has never told us what he thinks on this point. He refers to certain writers on the origin of language, who consider that the first materials of language are either interjections or imitations; but their writings in no wise support the theory that animals also could, either out of their own barkings and bellowings, or out of the imitative sounds of mocking-birds, have elaborated anything like what we mean by language, even among the lowest savages.

It may be in the recollection of some of my hearers that, in my Lectures on the Science of Language, when speaking of Demokritos and some of his later followers, I called his theory on the origin of language the *Bow-wow* theory, because I felt certain that, if this theory were only called by its right name, it would require no further refutation. It might have seemed for a time, to judge from the protests that were raised against that name, as if there had been in the nineteenth century scholars holding this Demokritean theory in all its crudity. But it required but very little mutual explanation before these scholars perceived that there was between them and me but little difference, and that all which the followers of Bopp insist on as a *sine quâ non* of scholarship is the admission of roots, definite in their form, from which to derive, according to strict phonetic laws, every word that admits of etymological analysis, whether in English and Sanskrit, or in Arabic and Hebrew, or in Mongolian and Finnish. For philological purposes it matters little, as I said in 1866, what opinion we hold on the origin of roots so long as we agree that, with the exception of a number of purely mimetic expressions, all words, such as we find them, whether in English or in Sanskrit, encumbered with prefixes and suffixes, and mouldering away under the action of phonetic decay, must, in the last instance, be traced back, by means of definite phonetic laws, to those definite primary forms which we are accustomed to call roots. These roots stand like barriers between the chaos and the kosmos of human speech. Whoever admits the historical character of roots, whatever opinion he may hold on their origin, is not a Demokritean, does not hold that theory which I called the Bow-wow theory, and cannot be quoted in support of Mr. Darwin's opinion that the cries of animals represent the earliest stage of the language of man.

If we speak simply of the materials, not of the elements, of language — and the distinction between these two words is but too often overlooked—then, no doubt, we may not only say that the phonetic materials of the cries of animals and the languages of man

[18] See Wundt, *Menschen- und Thierseele*, vol. ii. p. 265.

are the same, but, following in the footsteps of evolutionist philosophers, we might trace the involuntary exclamations of men back to the inanimate and inorganic world. I quoted formerly the opinion of Professor Heyse, who appealed to the fact that most substances, when struck or otherwise set in motion, show a power of reaction manifested by their various rings, as throwing light on the problem of the origin of language; and I do not think that those who look upon philosophy as a 'knowledge of the highest generalities' should have treated Professor Heyse with so much contempt.

But neither those who traced the material elements of language back to interjections and imitations, nor those who went farther and traced them back to the ring inherent in all vibrating substances, ought to have imagined for one moment that they had thus accounted for the real elements of language. We may account for the materials of many things, without thereby accounting for what they are, or how they came to be what they are. If we take, for instance, a number of flints, more or less carefully chipped and shaped and sharpened, and if we were to say that these flints are like other flints found by thousands in fields and quarries, this would be as true as that the materials for forming the words of our language are the same as the cries of animals, or, it may be, the sounds of bells. But would this explain the problem which we wish to explain? Certainly not. If, then, we were to go a step farther, and say that apes had been seen to use flints for throwing at each other,[19] that they could not but have discovered that sharp-edged flints were the most effective, and would therefore have either made a natural selection of them, or tried to imitate them—that is to say, to give to other flints a sharp edge—what would antiquaries say to such heresies? And yet I can assure them that to say that no traces of human workmanship can be discovered in these flints,[20] that they in no wise prove the early existence of man, or that there is no insuperable objection to the belief that these flints were made by apes, cannot sound half so incongruous to them, as to a man who knows what language is made of being told that the first grammatical edge might have been imparted to our words by some lower animals, or that, the materials of language being given, everything else, from the neighing of a horse to the lyric poetry of Goethe, was a mere question of development.

It would not be fair, however, to disguise the fact that in his view that animals possess language, Mr. Darwin has some very powerful allies, and that in quarters where he would least expect to find them. Archbishop Whately writes: 'Man is not the only animal that can make use of language to express what is passing in his mind, and can understand more or less what is so expressed by others.'

But even with bishops and archbishops against me, I do not despair. I believe I have as high an opinion of the faculties of animals as Mr. Darwin, Archbishop Whately, or any other man—nay, I may perhaps claim some credit for myself for having, in my Lectures delivered in 1862, vindicated for the higher animals more than ever was vindicated for them before.

But after reading the most eloquent eulogies on the intellectual powers and social virtues of animals—of which we have had a great deal of late—I always feel that all this and even much more might

[19] 'The Pavians in Eastern Africa.' See Caspari, *Urgeschichte*, i. p. 244.

[20] See *Whitley's Researches on Flints near Spiennes, in Belgium.*

be perfectly true, and that it would yet in no way affect the relative position of man and beast.

Let us hear the most recent panegyrist: 'To become man! Who should believe that so many, not only laymen, but students of nature, believe in God becoming man, but consider it incredible that an animal should become man, and that there should be a progressive development from the ape to man? The ancient world, and even now the highest among the Eastern nations, thought and think very differently on this point. The doctrine of metempsychosis connects man and beast, and binds the whole world together by a mysterious cord. Judaism alone, with its hatred of nature deities, and dualistic Christianity, have made this rift between man and beast. It is remarkable how in our own time and among the most civilised nations a deeper sympathy for the animal world has been roused, and has manifested itself in the formation of societies for preventing cruelty towards animals, thus showing that what, on one side, is the result of scientific research, viz. the surrendering of the exclusive position of man in nature, as a spiritual being, is received at the same time as a general sentiment.

'Public opinion, however, and what I may call the old orthodox natural science, persist nevertheless in considering man and beast as two separate worlds which no bridge can ever connect, were it only because man is man in so far only as he from the beginning possesses something which the beast has not and never will have. According to the Mosaic account, God created the beasts, as it were, in a lump; but in the case of man, He first formed his body of the dust of the ground and breathed into his nostrils the breath of life, and man became a living soul. This living soul of the old Jewish writers has afterwards been changed by Christianity into an immortal soul, a being different in kind and dignity from such other common souls as might be allowed to beasts. Or, the soul of man and beast being admitted to be the same, man was endowed in addition with a spirit, as the substantial principle of the higher intellectual and moral faculties by which he is distinguished from the beast.

'Against all this,' the writer continues, 'we have now the fact of natural science which can no longer be ignored, viz. that the faculties of beasts differ from those of man in degree only, and not in kind. Voltaire said truly, "Animals have sensation, imagination, memory, also desires and movements, and yet no one thinks of claiming for them an immaterial soul. Why should we, for our small surplus of these faculties and acts, require such a soul?" Now the surplus on the side of man is not indeed so small as Voltaire's rhetoric represents it; on the contrary, it is enormous. But for all that, it is a *plus* only, it is not something new. Even with animals of the lower orders it would take volumes, as Darwin says, to describe the habits and mental powers of an ant. The same with bees. Nay, it is remarkable that the more closely an observer watches the life and work of any class of animals, the more he feels inclined to speak of their understanding. The stories about the memory, the reflection, the faculties of learning and culture in dogs, horses, and elephants are infinite; and even in so-called wild animals similar qualities may be detected. Brehm, speaking of birds of prey, says: "They act after having reflected; they make plans and carry them out." The same writer says of thrushes: "They perceive quickly and judge correctly; they use all means and ways to protect themselves." Those varieties which have

grown up in the quiet and undisturbed forests of the North are easily taken in; but experience soon makes them wise, and those who have once been deceived are not easily cheated a second time (therein they certainly differ from man). Even among men, whom they never trust completely, they know well how to distinguish between the dangerous and the harmless; they allow the shepherd to approach more nearly than the hunter. In the same sense Darwin speaks of the incredible degree of acuteness, caution, and cleverness on the part of the furry animals of North America, as being chiefly due to the constant snares and wiles of the hunter.

'Mr. Darwin tries particularly to show in the higher animals the beginnings of moral sentiments also, which he connects with their social instincts. A kind of sense of honour and of conscience can hardly fail to be recognised in nobler and well-bred horses and dogs. And even if the conscience of dogs has not unjustly been traced back to the stick, it may well be asked whether the case is very different with the lower classes of man. Those instincts in animals which refer to the education of their young, to the care, trouble, and sacrifices on their behalf, must be considered as the first germs of higher moral faculties. Here, as Goethe says, we see indicated in the animal the bud of what in man becomes a blossom.'

So far the panegyrist; in reply to whom I can only say that, without doubting any of the extraordinary accounts of the intellect, the understanding, the caution, the judgment, the sagacity, acuteness, cleverness, genius, or even the social virtues of animals, the rules of positive philosophy forbid us to assert anything about their instincts or intellectual faculties. We may allow ourselves to be guided by our own fancies or by analogy, and we may guess and assert very plausibly many things about the inner life of animals; but however strong our own belief may be, the whole subject is transcendent, i.e. beyond the reach of positive knowledge. We all admit that, in many respects, the animal is even superior to man. Who is there but at one time or other has not sighed for the wings of birds? Who can deny that the muscles of the lion are more powerful, those of the cat more pliant, than ours? Who can doubt that the eagle possesses a keener vision, the deer a sharper hearing, the dog a better scent than man? Who has not sometimes envied the bear his fur, or the snail its house? Nay, I am quite prepared to go even farther, and if metaphysicians were to tell me that our senses only serve to distract the natural intuitions of the soul, that our organs of sense are weak, deceptive, limited, and that a mollusc, being able to digest without a stomach and to live without a brain, is a more perfect, certainly a more happy, being than man, I should bow in silence; but I should still appeal to one palpable fact—viz. that whatever animals may do or not do, *no animal has ever spoken.*

I use this expression advisedly, because as soon as we speak of language, we open the door to all kinds of metaphor and poetry. If we want to reason correctly, we must define what we mean by language. Now there are two totally distinct operations which in ordinary parlance go by the same name of language, but which should be distinguished most carefully as *Emotional* and *Rational* language. The power of showing by outward signs what we feel, or, it may be, what we think, is the source of emotional language, and the recognition of such emotional signs, or the understanding of their purport, is no more than the result of memory, a resus-

citation of painful or pleasant impressions connected with such signs. *That* emotional language is certainly shared in common by man and animals. If a dog barks, that may be a sign, according to circumstances, of his being angry or pleased or surprised. Every dog speaks that language, every dog understands it, and other animals too, such as cats or sheep, and even children, learn it. A cat that has once been frightened or bitten by a barking dog will easily understand the sound, and run away, like any other so-called rational being. The spitting of a cat, again, is a sign of anger, and a dog that has once had his eyes scratched by a cat would not be slow to understand that feline dialect, whenever he hears it in close proximity. The purring of a cat has a very different meaning, and it may be, as we have been told, like the murmuring of a mother to her beloved child. The subject of the emotional language of animals and man is endless, but we must leave it to the pen of the poet rather than of the philosopher.[21]

What, then, is the difference between *emotional* language and *rational* language? The very name shows the difference. Language, such as we speak, is founded on reason, reason meaning for philosophical purposes the faculty of forming and handling general concepts; and as that power manifests itself outwardly by articulate language only, we, as positive philosophers, have a right to say that animals, being devoid of the only tangible sign of reason which we know, viz. language, may by us be treated as irrational beings—irrational, not in the sense of devoid of observation, shrewdness, calculation, presence of mind, reasoning in the sense of weighing, or even genius, but simply in the sense of devoid of the power of forming and handling general concepts.

The distinction here made between emotional and rational language may seem fanciful and artificial to those who are not acquainted with the history and origin of language, but they have only to consult the works of modern physiologists and medical men to convince themselves that this distinction rests on what even they would admit to be a most solid basis. Dr. Hughlings Jackson, in some articles published in the *Medical Times and Gazette* for December 14 and 21, 1867, speaking of the disease of a particular part of the brain, says: 'This disease may induce partial or complete defect of *intellectual* language, and not cause corresponding defect of *emotional* or *interjectional* language. The typical patient in this disease misuses words or cannot use words at all, to express his thoughts; nor can he express his thoughts by writing, or by any signs sufficiently elaborate to serve instead of vocal or written words; nor can he read books for himself. But he can smile, laugh, cry, sing, and employ rudimentary signs of gesticulation. So far as these means of communication serve, therefore, he is able to exhibit his feelings to those around him. He can copy writing placed before him, and, even without the aid of a copy, sign his own name. He understands what is said to him, is capable of being interested in books which are read to him, and remembers incidents and tales. Sometimes he is able to utter a word or words, which he cannot vary, and which he must utter if he speak at all, no matter on what occasion. When excited, he can swear, and even use elaborate formulæ of swearing[22] (as, for example, "God bless my life"),

[21] See Darwin, *Descent*, vol. i. pp. 53, 54.

[22] Dr. Gairdner, *The Function of Articulate Speech*, 1866, p. 17.

which have come by habit to be of only interjectional value.[23] But he cannot repeat such words and phrases at his own wish or at the desire of others. And as he is able to copy writing, so he can, when circumstances dictate, as it were, to him, give utterance to phrases of more special applicability. Thus, a child being in danger of falling, one speechless patient, a woman, was surprised into exclaiming, "Take care." But in this, as in every other case, the patient remains perfectly incompetent to repeat at pleasure the phrase he has just used so appropriately, and has so distinctly uttered. . . . It would seem that the part of the brain affected in such cases is that which is susceptible of education to language, and which has been after the birth of the patient so educated. The effect of the disease, in relation to speech, is to leave the patient as if he had never been educated at all to language, and had been born without the power of being so educated. The disease in question is an affection of but one side, the left side, of the brain.' And again: 'Disease of a particular region of the left cerebral hemisphere is followed by a complete or partial loss of power in the *naming* process, and by consequent inability to speak, even when all the machinery of voice and articulation recognised in anatomy remains unchanged.'

The whole of this subject has of late been very fully examined, as may be seen in Dr. Bateman's book on Aphasia; and though one may feel doubtful as to the minute conclusions which Dr. Broca has drawn from his experiments, so much seems to me established: If a certain portion of the brain on the left side of the anterior lobe happens to be affected by disease, the patient becomes unable to use rational language; while, unless some other mental disease is added to aphasia, he retains the faculty of emotional language, and of communicating with others by means of signs and gestures.

In saying this, I shall not be suspected, I hope, of admitting that the brain, or any part of the brain, secretes rational language, as the liver secretes bile. My only object in referring to these medical observations and experiments was to show that the distinction between emotional and rational language is not artificial, or of a purely logical character, but is confirmed by the palpable evidence of the brain in its pathological affections. No man of any philosophic culture will look on the brain, or that portion of the brain which interferes with rational language, as the seat of the faculty of speech, as little as we place the faculty of seeing in the eye, or the faculty of hearing in the ear. That without which anything is impossible is not necessarily that by which it is possible. We cannot see without the eye, nor hear without the ear; perhaps we might say, we cannot speak without the third convolution of the left anterior lobe of the brain; but neither can the eye see without us, the ear hear without us, the third convolution of the left anterior lobe of the brain speak without us. To look for the faculty of speech in the brain would, in fact, be hardly less Homeric than to look for the soul in the midriff.

This distinction between *emotional* and *rational* language is, however, of great importance, because it enables us to see clearly in what sense man and beast may be said to share the gift of language in common, and in what sense it would be wrong to say so. Interjections, for instance, which constitute a far more important

[23] In another paper Dr. Jackson describes an oath extremely well as 'a phrase which emotion has filched from the intellect.'

element in conversation than in literary composition, are emotional language, and they are used by beasts as well as by men, particularly by a man in a passion, or on a low scale of civilisation. But there is no language, even among the lowest savages, in which the vast majority of words is not rational. If, therefore, Mr. Darwin (p. 35) says that there are savages who have no *abstract* terms in their language, he has evidently overlooked the real difference between rational and emotional language. We do not mean by rational language, a language possessing such abstract terms as whiteness, goodness, to have or to be; but any language in which even the most concrete of words are founded on general concepts, and derived from roots expressive of general ideas.

There is in every language a certain layer of words which may be called purely *emotional*. It is smaller or larger according to the genius and history of each nation, but it is never quite concealed by the later strata of rational speech. Most interjections, many imitative words, belong to this class. They are perfectly clear in their character and origin, and it could never be maintained that they rest on general concepts. But if we deduct that inorganic stratum, all the rest of language, whether among ourselves or among the lowest barbarians, can be traced back to *roots*, and every one of these roots is the sign of a general concept. This is the most important discovery of the Science of Language.

Take any word you like, trace it back historically to its most primitive form, and you will find that besides the derivative elements, which can easily be separated, it contains a predicative root, and that in this predicative root rests the connotative power of the word. Why is a *stable* called a *stable*? Because it stands. Why is a *saddle* called a *saddle*? Because you sit in it. Why is a *road* called a *road*? Because we ride on it. Why is *heaven* called *heaven*? Because it is heaved on high. In this manner every word, not excluding the commonest terms that must occur in every language, the names for *father*, *mother*, *brother*, *sister*, *hand* and *foot*, &c., have been traced back historically to definite roots, and every one of these roots expresses *a general concept*. Unless, therefore, Mr. Darwin is prepared to maintain that there are languages which have no names for *father* and *mother*, for *heaven* and *earth*, or only such words for those objects as cannot be derived from predicative roots, his statement that there are languages without abstract terms falls to the ground. Every root is an abstract term, and these roots, in their historical reality, mark a period in the history of the human mind—they mark the beginning of rational speech.

What I wish to put before you as clearly as possible is this, that roots such as *dā*, to give, *sthā*, to stand, *gā*, to sing, the ancestors of an unnumbered progeny, differ from interjectional or imitative sounds in exactly the same manner as general concepts differ from single impressions. Those, therefore, who still think with Hume that general ideas are the same thing as single impressions, only fainter, and who look upon this fainting away of single impressions into general ideas as something that requires no explanation, but can be disposed of by a metaphor, would probably take the same view with regard to the changes of cries and shrieks into roots. Those, on the contrary, who hold that general concepts, even in their lowest form, do not spring spontaneously from a *tabula rasa*, but recognise the admission of a co-operating Self, would look upon the roots of language as irrefragable proof of the presence of human workmanship in the very elements of language, as the earliest manifes-

tation of human intellect, of which no trace has ever been discovered in the animal world.

It will be seen from these remarks that the controversy which has been carried on for more than two thousand years between those who ascribe to language an onomatopœic origin, and those who derive language from roots, has a much deeper significance than a mere question of scholarship. If the words of our language could be derived straight from imitative or interjectional sounds, such as *bow wow* or *pooh pooh*, then I should say that Hume was right against Kant, and that Mr. Darwin was right in representing the change of animal into human language as a mere question of time. If, on the contrary, it is a fact which no scholar would venture to deny, that, after deducting the purely onomatopœic portion of the dictionary, the real bulk of our language is derived from roots, definite in their form and general in their meaning, then that period in the history of language which gave rise to these roots, and which I call the *Radical Period*, forms the frontier—be it broad or narrow—between man and beast.

That period may have been of slow growth, or it may have been an instantaneous evolution: we do not know. Like the beginnings of all things, the first beginnings of language and reason transcend the powers of the human understanding, nay, the limits of human imagination. But after the first step has been made, after the human mind, instead of being simply distracted by the impressions of the senses, has performed the first act of abstraction, were it only by making one and one to be two, everything else in the growth of language becomes as intelligible as the growth of the intellect; nay, more so. We still possess, we still use, the same materials of language which were first fixed and fashioned by the rational ancestors of our race. These roots, which are in reality our oldest title-deeds as rational beings, still supply the living sap of the millions of words scattered over the globe, while no trace of them, or anything corresponding to them, has ever been discovered even amongst the most advanced of catarrhine apes.

The problem that remains to be solved in our last Lecture is the origin of those roots.

FRASER'S MAGAZINE.

JULY 1873.

LECTURES ON MR. DARWIN'S PHILOSOPHY OF LANGUAGE.

By Professor Max Müller.

THIRD LECTURE,

Delivered at the Royal Institution, April 5, 1873.

THE problem which of late years has most deeply stirred the philosophic mind of Europe is the problem of creation. No doubt that problem is as old as the world, or at least as old as the first questionings of the human mind; and the solutions which it has received, both from poets and philosophers, are innumerable. Out of many solutions one, which best satisfies the enquiring intellect of the time, generally prevails. In ancient times one or the other solution has even been invested with a kind of sacred authority; and, as the subject is one on which real knowledge is impossible, it is hardly to be wondered at, that, with us too, the prevailing conception of creation should have continued, up to the nineteenth century, very much the same as what it was at the time of Moses.

Owing to the great development, however, of the study of nature in this century, and the wide diffusion of physical knowledge among all classes of society, the problem of creation has lately risen to the surface again. New facts challenge new thoughts, and the mass of new facts, throwing light on the earliest history of the world, has become so large that we need not wonder if philosophers felt inspired with fresh courage, and by elaborating a new theory of creation, which should not outrage the convictions of men of science and friends of truth, tried to wrest a new province from the land of the Unknowable.

The approaches were made from three points. First of all, there were the ancient vestiges of creation discovered in the strata of the earth; secondly, there was the living history of creation to be studied in the minute stages of embryonic development; and thirdly, there was the comparative method of anatomy, laying bare essential coincidences in the structures of living beings, even of such as had never before displayed the slightest traces of relationship.

The zealous and successful pursuit of these three branches of physical study, now generally spoken of as *Palæontology*, *Embryology*,[1] and *Comparative Anatomy*, has produced the same effect with regard to the problem of creation which our own

[1] It is impossible to use Ontology in the sense of Embryology, for Ontology has its own technical meaning and to use it in a new sense would give rise to endless confusion.

linguistic studies have produced with regard to the problem of the origin of language and thought.

As long as the question of the origin of language was asked in a general and indefinite way, the answers were mostly as general and as unsatisfactory as the questions themselves. In fact, the crude question, How was human language made, or how did it arise? admitted of no scientific answer, and the best that could be said on the subject was, that, like the beginnings of all things, the beginning of language, too, transcends the powers of the human understanding. But, when what we may call palæontological studies had placed before us the earliest vestiges of human speech in the most ancient inscriptions and literatures of the world; when, secondly, a study of living languages had disclosed to us the minute stages of dialectic growth and phonetic decay, through which all languages are constantly passing in their passage from life to death and from death to life; and when, lastly, the comparative method had disclosed to us the essential coincidences in languages, the relationship of which had never been suspected before, then the question of the origin of language started up again, and called for a new and more definite answer.

The analogy between the researches carried on by the students of physical science and by the students of language goes still farther. Whatever difference of opinion there may be between the different schools of physiologists, this one result seems to be permanently established, that the primary elements of all living organisms are the simple *cells*, so that the problem of creation has assumed a new form, and has become the problem of the origin and nature of these cells.

The same in the Science of Language. The most important result which has been obtained by a truly scientific study of languages is this, that, after accounting for all that is purely formal as the result of juxtaposition, agglutination, and inflection, there remain in the end certain simple elements of human speech —phonetic *cells*—commonly called roots. In place, therefore, of the old question of the origin of language, we have here, too, to deal with the new question of the origin of roots.

Here, however, the analogy between the two sciences, in their solution of the highest problems, comes to an end. There are, indeed, two schools of physiologists, the *polygenetic* and the *monogenetic*, the former admitting from the beginning a variety of primitive cells, the latter postulating but one cell, as the source of all being. But it is clear, that the monogenetic school is becoming more and more powerful. Mr. Darwin, as we saw, was satisfied with admitting four or five beginnings for plants, and the same number for animals. But his position has become almost untenable, and his most ardent disciple, Professor Haeckel, treats his master's hesitation on this point with ill-disguised contempt. One little cell is all that he wants to explain the Universe, and he boldly claims for his primordial Moneres, the ancestor of plants and animals and men, a self-generating power, the so-called *generatio spontanea* or *æquivoca*.

Professor Haeckel is very anxious to convince his readers that the difference between these two schools, the *monogenetic* and *polygenetic*, is of small importance. The differences, he says, between the various Moneres, whose bodies consist of simple matter without form or structure, and which are in fact no more than a combination of carbon in the form of white of eggs, are of a chemical nature only; and the differences of mixture in the endless varieties of combination of white of eggs are so fine as to be,

for the present, beyond the powers of human perception.[2] But if this is so, surely the rule of all scientific research would be, that we should wait before definitely deciding in favour of *one* primordial cell, and thus creating new trammels in the progress of free enquiries. Whatever the physiologist may say to the contrary, it does make a very great difference to the philosopher, whether the beginning of organic life has happened once, or may be supposed to have happened repeatedly; and though I do not grudge to the *Bathybios* of Haeckel the dignity of a new Adam, I cannot help feeling that in this small speck of slime, dredged up from the bottom of the Atlantic Ocean, there is too much left of the old Adam, too much of what I call mythology, too much of human ignorance, concealed under the veil of positive knowledge.

The students of language have given to the problem of the origin of language a far more exact and scientific form. As long as they deal with what may be called the Biology of language, as long as they simply wish to explain the actual phenomena of spoken dialects all over the world, they are satisfied with treating the variety of living cells, or the significant roots of language, as ultimate facts. These roots are what remains in the crucible after the most careful analysis of human language, and there is nothing to lead us on to search for one primordial root, or for a small number of uniform roots, except the mediæval idea that Nature loves simplicity. There was a time when scholars imagined they could derive a language from nine roots, or even from one; but these attempts were purely ephemeral.[3] At present we know that, though the number of roots is unlimited, the number of those which remain as the actual feeders of each single language amounts to about one thousand.

Some of these roots are, no doubt, secondary and tertiary formations, and may be reduced to a smaller number of primary forms. But here, too, philological research seems to me to show far more deference to the commandments of true philosophy than the prevalent physiological speculations. While the leading physiologists are striving to reduce all variety to uniformity, the student of language, in his treatment of roots, distinguishes where, to all outward appearance, there is no perceptible difference whatsoever. If in the same language, or in the same cluster of languages, there are roots of exactly the same sound, but different in their later development, a separate existence and an independent origin are allowed to each. There is, for instance, in the Aryan family, the well-known root DA. From it we have Sk. dádāmi, I give; Greek δίδωμι; Lat. *do*; Slavonic, da-mĭ; Lithuanian, dů-mi;[4] and an endless variety of derivatives, such as *donum*, a gift; French, *donner*, to give, *pardonner*, to forgive; Latin, *trado*, to give over; Greek, προδίδωμι, to surrender; then Italian, *tradire*; French, *trahir*, *trahison*; English, treason; Latin, *reddo*, to give back; the French, *rendre*, with all its derivatives, extending as far as *rente* and *rentier*. Another derivative of DĀ, to give, is *dōs*, *dōtis*, a giver, in which sense it occurs at the end of *sacer-dos*; and *dōs*, *dōtis*, what is given to the bride, the English *dower* (the French *douaire*), which comes from the French *douer*, dotare, to endow; a *dowager* being a widow possessed of a dowry.

---

[2] Haeckel, *Vorlesungen*, p. 372.
[3] *Lectures on the Science of Language*, I. p. 44.
[4] Pott, *Etymologische Forschungen*, 2nd edit. 1867, p. 105.

I might go on for hours before I could exhaust the list of words derived from this one root, DA, to give. But what I wish to show you is this, that by the side of this root DA there is another root DA, exactly the same in all outward appearance, consisting of D+Ā, and yet totally distinct from the former. While from the former we have, in Sanskrit, *dā-trám*, a gift, we have from the latter *dā'-tram*, a sickle. The meaning of the second root is to cut, to carve; from it Greek *δαίω*, and *δαίομαι*, *δαιτρός*, a man who carves. The accent remains, in Sanskrit, on the radical syllable in *dā'-tram*, i.e. the cutting (active); whilst it leaves the radical syllable in *dātrám*, i.e. what is given (passive).

There are still other roots, in outward appearance identical with these two, yet totally distinct in their potential character; meaning, neither to give, nor to cut, but to bind (for instance, in *διάδημα*, diadem, what is bound through the hair; *δέμα*, a band or bundle, *κρήδεμνον* (*κράς*, *δέμα*) head-dress; and another, meaning to teach, and to know, preserved in *διδάσκω*, Aor. Pass, *ἐ-δά-ην*, &c.

We have the root GAR, meaning to swallow, which yields us the Sanskrit *girati*, he swallows, the Greek *βιβρώ-σκει*, the Latin *vorat*. We have, secondly, a root GAR, meaning to make a noise, to call, which yields us *gar*-ate in Sanskrit, *γαργαρίζειν*, *βαρβαρίζειν*, and *βορβορύζειν* in Greek, and both *garrire* and *gingrire* in Latin. It is conceivable that these two roots may have been originally one and the same, and that GAR from meaning to swallow may have come to mean the indistinct and disagreeable noise which even now is called swallowing the letters, in Sanskrit *grāsa*,, in German *Verschlucken*. But a third root GAR, meaning to wake, the Greek *ἐγείρω*, perf. *γρήγορα*, can hardly be traced back to the same source, but has a right to be treated as a legitimate and independent companion of the other root GAR.

Many more instances might be given, more than sufficient to establish the principle, that even in the same language two or more roots may be discovered, identical in all outward appearance, yet totally different from each other in meaning and origin.

Then, why, it may be asked, do students of language distinguish, where students of nature do not? Why are physiologists so anxious to establish the existence of cells, uniform from their beginning, yet—I quote from Professor Haeckel—capable of producing by the processes of monogony, gemmation, polysporogony, and amphigony, the endless variety of living creatures?[5] Students of language, too, might say, like the physiologists, that, in such cases as the root DĀ, 'the difference of mixture in the endless varieties of consonants and vowels are so fine as to be, for the present at least, beyond the powers of human perception.' If they do not follow that Siren voice, it is because they hold to a fundamental principle of reasoning, which the evolutionist philosopher abhors, viz., that if two things, be they roots or cells or anything else, which appear to be alike, become different by evolution, their difference need not always be due to outward circumstances (commonly called environment), but may be due to latent dispositions which, in their undeveloped form, are beyond the powers of human perception. If two roots of exactly the same sound produce two totally distinct families of words, we conclude that, though outwardly alike, they are different roots. And if we

[5] Haeckel, *Natürliche Schöpfungsgeschichte*, achte Vorlesung; Strauss, *Alter und Neuer Glaube*, p. 169.

applied this reasoning to living germs, we should say that, if two germs, though apparently alike, grow, under all circumstances, the one always into an ape, and never beyond, the other always into a man, and never below, then the two germs, though indistinguishable at first, and though following for a time the same line of embryonic development, are different from the beginning, whatever their beginning may have been.

There is another point of difference between the treatment of cells by physiologists, and the treatment of roots by philologists, which requires careful attention. The physiologist is not satisfied with the admission of his uniform cells, but, by subjecting these organic bodies to a new chemical analysis, he arrives in the end at the ordinary chemical substances (the πρῶτα στοιχεῖα of nature), and looks upon these, not simply as ruins, or as the residue of a violent dissolution, but as the elements out of which everything that exists, whether lifeless or living, was really built up. He maintains, in fact, the possibility of inorganic substances combining, under favourable circumstances, so as to form organic substances, and he sees in the lowest Moneres the living proof of an independent beginning of life.[6]

In the Science of Language we abstain from such experiments, and we do so on principle. We do not expect to discover the origin of living roots by dissolving them into their inorganic or purely phonetic elements; for, although every root may be reduced to at least one consonant and one vowel, these consonants and vowels are simply the *materials*, but not the *elements* of language; they have, in fact, no real independent existence, they are nothing but the invention of grammarians, and their combination would only give rise to meaningless sounds, never to significant roots. While the physiologist still entertains a lingering hope that, with the progress of chemical science, it may be possible to produce a living cell out of given materials, *we know* that roots are simple, that they cannot and should not be decomposed, and that consonants and vowels are lifeless and meaningless materials, out of which no real root ever arose, and out of which certainly, nothing like a root can ever be reconstructed. The root DA, for instance, means, as we saw, to give; dissolve it into D and A, and you have meaningless slag and scum. Recompose D and A, and you have indeed the same sound, but its life and meaning are gone, and no language could, by its own free choice, accept such an artificial compound into its grammar or dictionary.

Such are some of the coincidences and some of the differences between Biology and Philology in their attempts to solve the problems of the origin of life and the origin of language; and the question does now arise, Are we, in the Science of Language, driven to admit that roots, because they yield to no further analysis, are therefore to be accepted as unintelligible in their origin, as miraculously implanted in man, but not in animals; or may we hope to be able to go beyond this limit, and discover something which, while it makes the origin of roots perfectly intelligible in man, explains to us, at the same time, why they

[6] A further distinction is made between *Autogony* and *Plasmogony*. The former is the generation of the most simple organic individuals from an inorganic formative fluid, a fluid which contains the requisite elements for the composition of an organism, dissolved in simple and firm combinations, e.g. carbonic acid, ammoniac, binary salts, &c. The latter is the generation of an organism from an organic formative fluid, a fluid which contains the requisite elements dissolved in complicated and loose combination of compounds of carbon, e.g. white of eggs, fat, &c. (Haeckel, *Vorlesungen*, p. 302.)

should never have arisen in any other animal?

Now I say, without hesitation, that roots, though they must be accepted as ultimate facts in the Science of Language, are not ultimate facts in the Science of Thought. The scholar naturally shrinks from a subject which does not directly concern him, and which, according to its very nature, does not admit of that exact treatment to which he is accustomed; but the philosopher must accept facts as they are, and his interests are with the Chaos as well as with the Kosmos. As the medical man, who has to study the marvellously arranged net-work of the nerves, shrinks instinctively from hypothetical explanations of the first formation of nervous channels, and centres, and ganglia, and plexuses, the scholar, too, is frightened by the chaotic proceedings which are inevitable when we come to ask, how roots came to be what they are. But to those who are ready to deal with hypothetical subjects in a hypothetical manner, there is nothing mysterious or irrational in the origin of roots. Only let us not forget that roots are not merely sounds, but sounds full of meaning. To take the roots *gā*, to sing, *dā*, to give, *vā*, to blow, and to ask why the three different consonants, g, d, v, should produce such difference of meaning, is absurd, and can never lead to any results. These consonants, though, when we learn our A B C, they look so very real, are nothing by themselves; they can, therefore, possess no meaning by themselves; or produce by themselves any effect whatsoever. All scholars, from Plato down to Humboldt, who imagine that they can discover certain meanings in certain consonants, have forgotten that neither consonants nor vowels are more than abstractions; and if there is any truth in their observations, as there undoubtedly is, we shall see that this must be explained in a different way. A root, on the contrary, is not, as is sometimes supposed, a mere abstraction or invention of grammarians. We have in many languages to discover them by analysis, no doubt; but no one who has ever disentangled a cluster of words can fail to see that, without granting to roots an independent, and really historical existence, the whole evolution of language would become an impossibility. There are languages, however, such as ancient Chinese, in which almost every word is still a root, and even in so modern a language as Sanskrit, there are still many words which, in outward appearance, are identical with roots.

As roots therefore have two sides, an outside, their sound, and an inside, their meaning, it is quite clear that we shall never arrive at a proper understanding of their nature, unless we pay as much attention to their soul as to their body. We must, before all things, have a clear insight into the mechanism of the human mind, if we want to understand the origin of roots; and by placing before you the simplest outline of the mind in the act of knowing, (without considering what concerns emotion and will), I believe I shall be able to lay bare the exact point where the origin of roots becomes, not only intelligible, but inevitable.

It is difficult, at the present moment, to speak of the human mind in any technical language whatsoever without being called to order by some philosopher or other. According to some, the mind is one and indivisible, and it is the subject-matter only of our consciousness which gives to the acts of the mind the different appearances of feeling, remembering, imagining, knowing, willing, or believing. According to others, mind, as a subject, has no existence whatever, and nothing ought to be spoken of except states of con-

sciousness, some passive, some active, some mixed. I myself have been sharply taken to task for venturing to speak, in this enlightened nineteenth century of ours, of different faculties of the mind, faculties being merely imaginary creations, the illegitimate offspring of mediæval scholasticism.

Now I confess I am amused rather than frightened by such pedantry. Faculty, *facultas*, seems to me so good a word, that, if it did not exist, it ought to be invented, in order to express the different modes of action of what we may still be allowed to call our Mind. It does not commit us to more than if we were to speak of the *facilities* or *agilities* of the mind, and only those who change the forces of nature into gods or demons, would be frightened by the faculties, as green-eyed monsters seated in the dark recesses of our self. I shall, therefore, retain the name of faculty, in spite of its retrogressive appearance; and, in speaking of the act of knowing in the most general, and least technical language, I shall say, that the mind acts in two different ways, or, that its knowledge has two aspects; the one *sensuous* or *intuitional*, sometimes called *precentative*, the other, *rational* or *conceptual*, sometimes called *representative*. I do not mean that the two can be separated or cut asunder, as on a dissecting table, but only that they can be, and ought to be, distinguished.[7]

Although knowledge is impossible, whether for man or beast, without intuitions, the knowledge of man, as soon as he has left the stage of infancy, i.e. speechlessness, is never intuitional only, but always both intuitional and conceptual. Intuition is knowledge too, but it is not knowledge in the technically defined and restricted sense of the word. It is experience concerned with individual objects only, whether external, as supplied by sense, or internal, as supplied by emotion or volition.

True knowledge, even in its lowest form, always consists in the combination of an intuition and a concept. When I say, This is a dog, or, This is a tree, or, This is anything else, I must have the concept of a dog or a tree to which I refer this or that intuition, this or that state of consciousness. These concepts are not intuitive. There is no word in the whole of our dictionary, with the exception of proper names, to which anything real or intuitional corresponds. No one ever saw a dog, or a tree; but only this or that dog, a Scotch terrier or a Newfoundland dog; a fir tree, or an oak tree, or an apple tree; and then again, no one ever saw an apple tree, but only a few parts of it, a little of the bark, a few leaves, an apple here and there; and all these again, not as they really are, but one side of them only. Tree, therefore, is a concept, and, as such, can never be seen or perceived by the senses, can never acquire phenomenal or intuitional form. We live in two worlds, the world of sight and the world of thought; and, strange as it may sound, nothing that we think, nothing that we name, nothing that we find in our dictionary, can ever be seen, or heard, or perceived.

Now our concepts and our words are produced by a faculty, or by a mode of mental action, which is not simply a barrier between man and beast, but which creates a new world in which we live. If all animals were blind, and man alone possessed the faculty of seeing, that would not constitute a barrier between man and beast; it would simply be

---

[7] Kant, *Prolegomena*, p. 60. 'Die Summe hiervon ist diese: die Sache der Sinne ist anzuschauen, die des Verstandes zu denken. Denken aber ist Vorstellungen in ein Bewusstsein vereinigen.'

an increase of that intuitional knowledge which we share in common with the beast.

But the faculty of forming concepts is something, not simply beyond, but altogether beside the world of sense. Concepts are formed by what is called the faculty of abstraction, a very good word, as expressing the act of dissolving sensuous intuitions into their constituent parts, divesting each part of its momentary and purely intuitional character, and thus imparting to it that general capacity which enables us to gain general, conceptual, real knowledge.

There is, no doubt, considerable difference of opinion among psychologists as to the exact process by which concepts are formed; but, for the object which we here have in view, any theory, from Plato down to Hume, will be acceptable. What is important to us is to see clearly that, as long as we have intuitional knowledge only, as long as we only see, hear, or touch this or that, we cannot predicate, we cannot name, we cannot reason, in the true sense of the word. We can do many things intuitively; perhaps the best things we ever do are done intuitively, and as if by instinct; and for the development of animal instincts, for all the clever things that, we are told, animals do, intuitional knowledge is more than sufficient, and far more important than conceptual knowledge. But, in order to form the simplest judgment, in order to say 'This is green,' we must have acquired the concept of green; we must possess what is generally called the idea of green, with its endless shades and varieties; we must, at least, to speak with Berkeley, 'have made the idea of an individual the representative of a class.' Thus only can we predicate green of any single object which produces in us, besides other impressions, that impression also which we have gathered up with many others in the concept and name of 'green.'

The difference between intuitional and conceptual knowledge has been dwelt on by all philosophers; nor do I know of any philosopher of note who has claimed for animals the possession of conceptual knowledge. Even evolutionist philosophers, who admit no difference in kind whatsoever, and who therefore can look upon human reason as a development only of brute reason, seldom venture so far as to claim for animals the actual possession of conceptual knowledge.

Locke, who can certainly not be suspected of idealistic tendencies, says,[8] 'If it may be doubted whether beasts compound and enlarge their ideas that way to any degree, this, I think, I may be positive in, that the power of abstracting is not at all in them; and that the having of general ideas is that which puts a perfect distinction betwixt man and brutes, and is an excellency which the faculties of brutes do by no means attain to. For, it is evident, we observe no footsteps in them of making use of general signs for universal ideas; from which we have reason to imagine that they have not the faculty of abstracting or making general ideas, since they have no use of words or any other general signs.'

Few philosophers have studied animals so closely, and expressed their love for them so openly as Schopenhauer. 'Those,' he says, 'who deny understanding to the higher animals, can have very little themselves.' 'It is true,' he says, in another place, 'animals cannot speak and laugh. But the dog, the only real friend of man, has something analogous,—his own peculiar, expressive, good-natured, and thoroughly honest wagging of the tail. How far better is this natural

[8] *Lectures on the Science of Language*, I. 405.

greeting than the bows and scrapings and grinnings of men! How much does it surpass in sincerity, for the present at least, all other assurances of friendship and devotion? How could we endure the endless deceits, tricks and frauds of men, if there were not dogs into whose honest faces one may look without mistrust.'

The same philosopher assigns to animals both memory and imagination (*Phantasie*). He quotes the case of a puppy, unwilling to jump from a table, as a proof that the category of causality belongs to animals also. But he is too expert a philospher to allow himself to be carried away by fanciful interpretations of doubtful appearances; and when he explains the formation of general notions as the peculiar work of reason, he states, without any hesitation or qualification, 'that it is this function which explains all those facts which distinguish the life of men from the life of animals.'[9]

I have said again and again that according to the strict rules of positive philosophy, we have no right either to assert or to deny anything with reference to the so-called mind of animals. But to those who think that philosophy may trust to anthropomorphic analogies, and that at least no counter arguments can be brought forward against their assertions that animals generalise, form concepts, and use them for the purpose of reasoning, exactly as we do, I may be allowed to propose at least two cases for explanation. They are selected out of a large mass of stories which have lately been collected in illustration of the animal intellect, and they possess at least this advantage, that they are both told by truly scientific observers.

The first is taken from Autenrieth, in his *Ansichten über Natur und Seelenleben*, published in 1836.

'The grub of the *Nachtphauenauge* spins, at the upper end of its case, a double roof of stiff bristles, held together at the end by very fine threads. This roof opens through a very light pressure from within, but offers a strong resistance to any pressure from without. If the grub acted according to judgment and reason, it would, according to human ideas, have had to consider as follows:—That it might possibly become a chrysalis, and be exposed to all sorts of accidents without any chance of escape, unless it took sufficient precautions; that it would rise from the chrysalis as a butterfly, without having the organs and power to break the covering which it had spun as a grub, or without being able, like other butterflies, to emit a liquid capable of dissolving silky threads; that, therefore, unless it had, while a grub, made preparations for an easy exit from its prison, it would suffer in it a premature death. While engaged in building such a prison the grub ought to have perceived clearly that, in order to escape hereafter as a butterfly, it would have to make a roof so constructed that it should protect from without, but open easily from within, and that this could be effected by means of stiff silky bristles, converging in the middle, but otherwise free. It would also have to know beforehand that, for that purpose, the same silky substance had to be used out of which the whole covering was built up, only with greater art. And yet it could not have been instructed in this by its parents, because they were dead before it escaped from its egg. Nor could it have learnt it by habit and experience, for it performs this work of art once only in its life; nor by imitation, for it does not live in society. Its understanding, too, could be but little cultivated

[9] Frauenstädt, *Schopenhauer-Lexicon*, s.v. *Begriff*.

during its grub-life, for it does nothing but creep about on the shrub on which it first saw the light, eat its leaves, cling to it with its feet, so as not to fall to the ground, and hide beneath a leaf, so as not to be wetted by the rain. To shake off by involuntary contortions its old skin whenever it became uncomfortable, was the whole of its life, the whole of its reasoning, before it began to spin its marvellous shroud.'

The other case is an experiment very ingeniously contrived, with a view of discovering traces of generalisation in the ordinary habits of animals. The experiment was made by Mr. Amtsberg, of Stralsund, and described by Dr. Möbius, Professor of Zoology at Kiel.[10]

'A pike, who swallowed all small fishes which were put into his aquarium, was separated from them by a pane of glass, so that, whenever he tried to pounce on them, he struck his gills against the glass, and sometimes so violently that he remained lying on his back, like dead. He recovered, however, and repeated his onslaughts, till they became rarer and rarer, and at last, after three months, ceased altogether. After having been in solitary confinement for six months, the pane of glass was removed from the aquarium, so that the pike could again roam about freely among the other fishes. He at once swam towards them, but he never touched any one of them, but always halted at a respectful distance of about an inch, and was satisfied to share with the rest the meat that was thrown into the aquarium. He had therefore been trained so as not to attack the other fishes which he knew as inhabitants of the same tank. As soon, however, as a strange fish was thrown into the aquarium, the pike in nowise respected him, but swallowed him at once. After he had done this forty times, all the time respecting the old companions of his imprisonment, he had to be removed from the aquarium on account of his large size.'

'The training of this pike,' as Professor Möbius remarks, 'was not, therefore, based on judgment; it consisted only in the establishment of a certain direction of will, in consequence of uniformly recurrent sensuous impressions. The merciful treatment of the fishes which were familiar to him, or, as some would say, which he knew, shows only that the pike acted without reflection. Their view provoked in him, no doubt, the natural desire to swallow them, but it evoked at the same time the recollection of the pain which he had suffered on their account, and the sad impression that it was impossible to reach the prey which he so much desired. These impressions acquired a greater power than his voracious instinct, and repressed it at least for a time. The same sensuous impression, proceeding from the same fishes, was always in his soul the beginning of the same series of psychic acts. He could not help repeating this series, like a machine, but like a machine with a soul, which has this advantage over mechanical machines, that it can adapt its work to unforeseen circumstances, while a mechanical machine can not. The pane of glass was to the organism of the pike one of these unforeseen circumstances.'

Truly scientific observations and experiments, like the two here mentioned, will serve at least to show how much can be achieved by purely intuitional knowledge, possessed in common by men and animals, and without the help of that conceptual knowledge which I re-

[10] *Schriften des Naturwissenschaftlichen Vereins für Schleswig-Holstein.* Separatabdruck. Kiel, 1873.

gard as the exclusive property of man.

With us, every element of knowledge, even the simplest impression of the senses, has been so completely conceptualised, that it is almost impossible for us to imagine intuitional without conceptual knowledge. It is not always remarked that we men have almost entirely left the sphere of purely intuitional knowledge, and that the world in which we live and move and have our being is a world of concepts; a world which we have created ourselves, and which, without us, without the spectators in the theatre, would vanish into nothing.

What do we mean when we say we know a thing? A child which for the first time in his life sees an elephant, may stare at the huge beast, may fix his eyes on its trunk and tusks, may touch its skin, and walk round the monster so as to measure it from every side. While this is going on the child sees the beast, feels it, measures it; but we should never say the first time the child sees an elephant, that he knows it.

When the child sees the same elephant, or another elephant, a second time, and *recognises* the animal as the same, or *nearly* the same which he saw before, then, for the first time, we say that the child knows the elephant. This is knowledge in its lowest and crudest form. It is no more than a connecting of a present with a past intuition or phantasm; it is, properly speaking, *remembering* only, and not yet *cognition*. The animal intellect, according to the ordinary interpretation, would go as far as this, but no farther.

But now let us take, not exactly a child, but a boy who for the first time sees an elephant. He, too, does not know the elephant, but he knows that what he sees for the first time, is an *animal*. What does that mean? It means that the boy possesses the concept of a living and breathing being, different from man, and that he recognises this general concept in the elephant before him. Here, too, cognition takes place by means of *re*cognition; but what is recognised is not connected with a former intuition, but with a concept, the concept of animal.[11]

Now, an animal, as such, has no actual existence. A boy may have seen dogs, cats, and mice, but never an animal in general. The concept of animal is therefore of man's own making, and its only object is to enable man to know.

But now let us make a further step, and instead of a child or a boy, take a young man who knows the elephant, not only as what he has seen in the Zoological Garden, not only as an animal, but scientifically, as we call it, as a vertebrate. What is the difference between his knowledge and that of the boy? Simply this, that he has formed a new concept—that of the vertebrate — comprehending less than the concept of animal, but being more definite, more accurate, and therefore more useful for knowing one class of animals from another. These scientific concepts can be made narrower and narrower, more and more accurate and scientific, till at last, after having classed the elephant as a vertebrate, a mammal, a pachydermatous animal, and a proboscidate, we leave the purely physical classification, and branching off into metaphysical language, call the elephant a living object, a material object, an object in general. In this, and in no other way, do we

---

[11] When the Romans first became acquainted with the elephant, they used the concept of *ox* for the conception of the new animal, and called it *Bos Luca*. In the same manner savage tribes, who had never seen horses, called horses large pigs.

gain knowledge, whether scientific or unscientific; and if we should ever meet with an intuition for which we have no concept whatsoever, not even that of material object, then that intuition would be inconceivable, and utterly unknowable; it would transcend the limits of our knowledge.[12] The whole of what we call the human intellect consists of these concepts, a kind of net for catching intuitional knowledge, which becomes larger and stronger with every draught that is brought to land. Wonderful as the human intellect may appear, when we look upon it as a whole, its nature is extremely simple. It separates and combines, it destroys and builds up, it throws together at haphazard or classifies with the minutest care, the materials supplied by the senses, and it is for this very reason, because it intermixes, or interlaces, or interlinks, that it was called the *Inter-lect*, softened into *Intellect*. The more concepts we possess, the larger is our knowledge; the more carefully we handle or interlink our concepts, the more closely do we reason; and the more freely we can tumble out the contents of these pigeon-holes, and throw them together, the more startling is our power of imagination.

We now come to the next point, How is this work of the human intellect, the forming and handling of concepts, carried on? Are concepts possible, or, at least, are concepts ever realised without some outward form or body? I say decidedly, No. If the Science of Language has proved anything, it has proved that conceptual or discursive thought can be carried on in words only. *There is no thought without words, as little as there are words without thought.* We can, by abstraction, distinguish between words and thought, as the Greeks did, when they spoke of inward (ἐνδιάθετος) and outward (προφορικός) Logos, but we can never separate the two without destroying both. If I may explain my meaning by a homely illustration, it is like peeling an orange. We can peel an orange, and put the skin on one side and the flesh on the other; and we can peel language, and put the words on one side and the thought or meanings on the other. But we never find in nature an orange without peel, nor peel without an orange; nor do we ever find in nature thought without words, or words without thought.

It is curious, however, to observe how determinately this conclusion has been resisted. It is considered humiliating that what is most spiritual in us, our thoughts, should be dependent on such miserable crutches as words are supposed to be. But words are by no means such miserable crutches. They are the very limbs, aye, they are the very wings of thought. We do not complain that we cannot move without legs. Why then should we consider it humiliating that we cannot think without words?

The most ordinary objection to this view of thought and language is, that if thought were dependent on words, the deaf and dumb would be without conceptual thought altogether. But, according to those who have best studied this subject, it is perfectly true[13] that deaf and dumb persons, if left entirely to themselves, have no concepts, except such as can be expressed by less perfect symbols—and that it is only by being taught that they acquire some kind of conceptual thought and language. Were this otherwise, however, we, at all events, could

[12] See the whole of this subject treated most excellently by Mr. Herbert Spencer, *First Principles*, p. 79.

[13] *Lectures on the Science of Language*, II. 74, note.

know nothing of their concepts, except through some kind of language, intelligible both to them and to ourselves, while, according to the premiss, the deaf and dumb are supposed to be without language altogether.

Another and more powerful objection is, that the invention of language involves the previous existence of concepts, because we can only feel impelled to express what already exists in our mind. This objection, however, has been met by showing that in the usual sense of that word language was never invented, and that here, as in all other cases, though we may say that, logically, the function is the antecedent of the organ, yet in reality organ and function always presuppose each other, and cannot exist the one without the other.

A third objection is, that language, in the usual sense of the word, is not the only organ of conceptual thought. Now this is perfectly true, and has never been questioned. Besides the phonetic symbols of language, there are other less perfect symbols of thought, which are rightly called *ideographic*. We can form the concept of '*three*' without any spoken word, by simply holding up three fingers. In the same manner the hand might stand for *five*, both hands for *ten*, hands and feet for *twenty*. This is how people who possessed no organs of speech, would speak; this is how the deaf and dumb *do* speak.[14] Three fingers are as good as three strokes, three strokes are as good as three clicks of the tongue, three clicks of the tongue are as good as the sound *three*, or *trois*, or *drei*, or *shalosh* in Hebrew, or *san* in Chinese. But all these are signs; and being signs, symbols, or embodiments of concepts, they fall under the general category of *logos* or language. 'As a matter of necessity,' Professor Mansel remarked, 'men must think by symbols; as a matter of fact, they do think by language.'[15]

Nothing, however, seems of any avail to convince our opponents that they cannot do what they imagine they have been doing all their lives, viz., thinking silently, or without words. Some of the Polynesian savages would seem to have a far truer insight into the nature of thought, for their expression for thinking is 'speaking in the stomach.' But modern philosophers imagine they are wiser than these primitive savages; and in order to put an end to all controversy, they have had recourse even to the test of experiment. I shall try to describe these experiments as well as I can, and if my description seems incredible, it is certainly not my fault. As far as I can follow those who have tried the experiment, they begin by shutting their eyes and ears, and holding their breath. They then sink into unconsciousness, and when all is dark and still, they try their new art of ventriloquism, thinking thoughts without words. They begin with a very simple case. They want to conjure up the thought of a . . . . I must not say what, for it is to be a nameless thing, and every time that its name rises, it is gulped down and ordered to vanish. However, in confidence, I may whisper that they want to conjure up the thought of a—*dog*.

Now the word dog is determinately suppressed; hound, cur, and all the rest, too, are ordered away. Then begins the work. 'Rise up, thou quadruped with ears and wagging tail!' But alas! the charm is already broken! Quadruped, ears,

[14] See some excellent remarks on gesture-language by Mr. E. B. Tylor, in the *Fortnightly Review*, 1866, p. 544.

[15] *North British Review*, 1850.

tail, wagging, all are words which cannot be admitted.

Silence is restored, and a new effort begins. This time there is to be nothing about quadruped, or animal, or hairy brute; the inner consciousness sinks lower, and at last there rises a being, to be developed gradually and insensibly into a dog. But, alas! 'being,' too, is a word, and as soon as it is whispered, all the potential dogs vanish into nothing.

A last appeal, however, remains. No animal, no being, nothing is to be talked of; complete silence is restored; no breath is drawn. There is a something coming near, the ghost appears, when suddenly he is greeted by the recognising self with Bow-wow! bow-wow! Then, at last, the effort is given up as hopeless, the eyes are opened, the ears unstopped, the breath is allowed to rise again, and as soon as the word dog is uttered, the ghost appears, the concept is there, we know what we mean, we think and say Dog. Let any one try to think without words, and, if he is honest, he will confess that the process which he goes through is somewhat like the one I have just tried to describe.

I believe that there would have been far less unwillingness to admit that conceptual thought is impossible without language, if people had not been frightened by the recollection of the old controversies between Nominalism and Realism. But the Science of Language has nothing to do with either Nominalism or Realism. It does not teach that concepts are nothing but words, but only that concepts are nothing without words, and words nothing without concepts. If Condillac maintained that science is but a well-made language, he was right, but only because he assigned to language a much fuller meaning than it usually has. Again, when Horne Tooke said that the business of the mind extended no further than to receive impressions, that what are called its operations are merely the operations of language, he too was right, only that he used mind where we genealy use sense, and language where we use λόγος or reason. I quoted on a former occasion[16] the words of Schelling and Hegel on the indivisibility of thought and language; I may add to-day the testimony of one who looked upon the philosophy of Schelling and Hegel as *verba præterquam nihil*, and who yet fully supports their view on this point.

'That language (verbal or other) is inseparable from thought, is rendered morally certain by the impossibility under which we all labour of forming universal notions without the aid of voluntary symbols. The instant we advance beyond the perception of that which is present *now* and *here*, our knowledge can be only representative; as soon as we rise above the individual object, our representative sign must be arbitrary. The phantasms of imagination may have more or less resemblance to the objects of sense; but they bear that resemblance solely by virtue of being, like those objects themselves, individual. I may recall to mind, with more or less vividness, the features of an absent friend, as I may paint his portrait with more or less accuracy; but the likeness in neither case ceases to be the individual representation of an individual man. But my conception of a man in general can attain universality only by surrendering resemblance; it becomes the representative of all mankind only because it has no special likeness to any one man.'[17]

But this is not all. The Science of Language teaches us not only that there can be no concept without

[16] *Lectures on the Science of Language*, II. p. 77.
[17] *Letters, Lectures, and Reviews*, by H. L. Mansel, p. 8.

a word, but that every word of our language, (with the exception of purely interjectional and imitative words) is based on a concept.

Let us clear the ground a little before we proceed. We know,[18] first of all, that all words which express abstract ideas are borrowed from some material appearance. '*Right* means straight; *wrong* means twisted. *Spirit* primarily means wind; *transgression*, the crossing of a line; *supercilious*, the raising of the eyebrow.'

We know that *anima* in Latin means the wind, the breath of living beings, life, and lastly soul. Sallust says, *Ingenii facinora, sicut anima, immortalia sunt*, the works of genius are immortal, like the soul. We may therefore say that in *anima*, the French *âme*, the original concept is breathing. But we have now to advance a step farther into that earlier stratum of language and thought where we want to find out, not only the original concept of *anima*, soul, but the original concept of *anima*, wind. Why was it, and how was it, that the wind was ever called *anima*? In fact, why has any word in Sanskrit, Greek and Latin, just that form and that meaning which it has? That is what we want to know if, as scholars, we speculate on the origin of language.

The answer which the Science of Language gives is this: Take any word you like in any language which has a past, and you will invariably find that it is based on a concept. The process of names-giving was, in fact, the first attempt at classification, very weak, very unscientific, no doubt, but for that very reason all the more interesting for watching the pre-historic growth of the human mind. Thus, in the old Aryan name for horse, Sansk., asva, equus, ἵππος, Old Saxon, *ehu*, we discover nothing like the neighing of a horse, but we discover the concept of quickness embodied in the root AK, to be sharp, to be quick, from which we have likewise the names for mental quickness, such as *acutus*. We therefore see here, not in theory, but by actual historical evidence, that the concept of quickness existed, *had been fully elaborated first*, and that through it the conceptual, as distinct from the purely intuitional knowledge of horse was realised. That name, the quick, might have been applied to many other animals too; but having been repeatedly applied to horses, it became for that very reason unfit for any other purposes. Serpents, for instance, are quick enough when they fall on their prey, but their name was formed from another concept, that of squeezing or throttling. They were called *ahi* in Sanskrit; ἔχις in Greek; *anguis* in Latin, all from a root AH, to squeeze; or *sarpa*, in Latin serpens, from a root SARP, to creep, to go.

The goose is called hamsa-s in Sanskrit; gós (for gans) in Anglo-Saxon; 'ans-er (for ganser) in Latin. The root from which these words are derived was GHA, to open the mouth, to gape, modified to GHAN in χαίνω, and to GHANS. The Greek χήν, χηνός, comes from the same root in its simpler form GHAN. The goose was, therefore, originally conceived as the gaping, or hissing bird, and hence its name.

The wolf was called varka-s, from a root VARK, to tear, and the same word appears as the name of the wolf in Sanskrit as vrika-s; in Greek as Fλύκο-ς; in Latin as Lupu-s (vlupus); in Gothic as vulf-s.

The pig was called sus, ὗς; Old High-German, sū; Gothic, *svein*: all from a root SU, to beget; the sow being considered the most prolific of domestic animals. The Sanskrit sūkara-s, lit. the su-maker or grunter, is clearly a play of popular etymology.

[18] See Emerson, *Complete Works*, Vol. II. p. 149.

By the same simple process, class after class of animals was separated from the crude mass of intuitional knowledge; birds, fishes, worms, trees and plants, stones and metals, were all distinguished by conceptual names, and man, too, received his proper name, either as the earth-born (homo), or as the dying creature (mortalis), or as the measurer and thinker (manus).

Birds were called in Sanskrit vi, plural, vayas; the Latin, avis; the Greek οἰ in οἰ-ωνός, lit. a large bird. The name meant probably at first no more than the movers, from the root VĪ, which also yielded vāyu-s, a name for the wind in Sanskrit and Zend;[19] but it soon answered the purpose of distinguishing the flying animals from all others. As other distinguishing qualities of birds came to be observed, they, too, found expression in language. Thus we have in Sanskrit pakshin, possessed of wings, from paksha, wing;[20] patrin, feathered, from patra-m, feather; patatrin, feathered, from patatra-m, feather; *andaga*-s, egg-born or oviparous; khaga-s, sky-goer, &c. In Greek we have besides οἰωνός, ὄρνις, ὄρνιθος, it may be from a root AR, to rise; πτηνόν, the flying animal. In Latin we find *volucris*, flying; *ales*, *alitis*, winged, &c.

For fish there is no name that could be claimed for the early Aryan period; and the names which occur in Sanskrit, Greek, and Latin, matsya, ἰχθύς, piscis, do not clearly reveal their predicative power.

The name for worm in Sanskrit is *krimi*-s; in Lithuanian, *kirmi-s*, both of which can be derived from the root KRAM, to walk, to roam. The Latin vermis, and the Gothic vaurm-s, come probably from the same source, but the Greek ἕλμις must be derived from the root VAL, to twist.

In this manner, and in no other, our concepts and our names, our intellect and our language, were formed together. Some single feature was fixed upon as characteristic of an object, or of a class of objects, a root was there which expressed that feature, and by the addition of a pronominal base, a compound was formed, meaning originally whatever the roots expresses, substantiated in a certain place, predicated of a certain object. Thus the root *yudh*, to fight, comes to mean by the mere addition of a pronominal base, commonly called the termination of the nominative singular, the fight, the fighter, and the instrument of fighting. This ambiguity was afterwards removed by the introduction of so-called suffixes, by which a distinction was made between such words as *yudh-i*, the act of fighting; *yudh-ma*, a fighter; (*ā*)*yudh-a*, a weapon. In these words we say that *yudh* appears as the root; and how real that root is we can easily see by its frequent occurrence, not only as a root, but as a perfect word in the oldest Sanskrit, that of the Veda. We find there[21] the locative yudh-i, in the battle; the instrumental yudh-ā, with a weapon; the locative plural, yut-su, among fighters; just as we find yu-yudh-e, he has fought, and ayuddha, he fought, &c. The difference between the nominal and verbal compounds is simply this, that the former express fighting-there, fighting-he, fighting-one, fighter: the latter fighting-I, fighting-thou, fighting-he.

Without entering further into the niceties of these grammatical compositions, I only wish to point out here, first, that the whole of

[19] See Justi, *Handbuch*, s. v. VI. Pictet's statement (1,509) that vī means in Zend fish also, is unfounded.

[20] Benfey compares pakshin with Goth. *fugl*, fowl.

[21] M. M. *Translation of Rig-Veda*, vol. I. p. 202.

our language, from the simplest word to the most complex paulo-post future, is conceptual; secondly, that language pre-supposes the formation of concepts; and thirdly, that all such concepts are embodied in roots. The two problems, therefore, that of the elaboration of concepts, and that of the elaboration of roots, become in reality one, and must be solved together, if they are to be solved at all.

Now, whatever difference of opinion there may be among philosophers as to the real origin of concepts, there can be none as to the origin of roots. It is true these roots are frequently spoken of as something mysterious, but this mystery, like many other mysteries, would seem to be of our own making.

Let us see, first of all, what roots are not. Roots are not either interjections or imitations. Interjections such as pooh, and imitations such as bow-wow, are the very opposite of roots. *They are vague and varying in sound, and special in meaning; while roots are definite in sound, but general in meaning.* Interjections, however, and imitations are the only possible materials out of which human language could be framed; and the real problem, therefore, is this, how, starting with interjections and imitations, can we ever arrive at roots?

Interjections and imitations deserve a much more careful study than they have hitherto received, even from those who imagine that our words can be derived straight from interjections and imitations.

Nothing seems at first sight so easy, yet nothing is in reality so difficult as to represent either the sounds by which our own feelings manifest themselves, or the sounds of nature, such as the notes of birds, the howling of the wind, the falling of a stone, by articulate sounds. From the very beginning the process must have given rise to an infinite variety of imitations, many of which it would be almost impossible to recognise or understand, without traditional or social helps. Even in our times and among civilised nations, with languages fixed by thousands of years of tradition, usage, literature, and grammar, the expressions for the most ordinary feelings vary considerably. The Frenchman, as an observant traveller has remarked, expresses surprise by Ah!, the Englishman by Oh!, the German by Ih! The Frenchman says, *Ah, c'est magnifique*; the Englishman, *Oh, that is capital*; the German, *Ih, das ist prächtig*. Nor do these interjections express exactly the same feeling; they all express surprise, no doubt, but the surprise peculiar to each of these three national characters. The surprise of the Frenchman is simple and open; in saying Ah! he is all agape, *il est ébahi*. The surprise of the Englishman is restrained and deep; in saying Oh! he swallows half of his admiration. The surprise of the German is high and sharp; in saying Ih! he almost chirps with delight.

In Chinese surprise is expressed by *hu* and *fu*, applause by *tsai*, misery by *i*, contempt by *ai*, pain by *uhu*.

Frequently it is as difficult to define the exact sound as the exact meaning of these interjections, so that in an Italian grammar no less than twenty significations are ascribed to the interjections *ah! ahi!* With a little more imagination quite as many and even more meanings might be detected in the English Ah!

Some scholars have brought themselves to imagine that there is some hidden connection between the letter N and the concept of negation. Yet, all that we have a right to say is that *No* may express negation, but not, that it must. As a matter of fact, there are languages in which *no* means *yes*.

This uncertainty becomes still more startling when we come to examine the way in which the sounds uttered by animals are imitated in different languages. I shall give a few specimens from Chinese. What would you guess to be the meaning of *kiao kiao*? It is meant for the cry of the cock; *kao kao* stands for the cry of the wild goose; *siao siao* is meant to represent the sound of rain and wind; *lin lin* of rolling carriages; *tsiang tsiang*, of chains; *kan kan*, of drums, and so on.

This subject is in reality endless; and the more we compare the representations of the cries of animals in different languages, the more shall we see that a comparative grammar of them is almost impossible.

I shall give you the imitations which occur in German of the cries of some animals, chiefly birds, but I doubt whether you will easily recognise them.

What is *zir zir*? It is meant for the thrush. What is *quak quak*? The duck, no doubt; but in other places the guttural has been changed into the labial (what scholars call labialism), and the sound uttered by the duck is rendered by *pak pak*. Thus the cry of the owl is represented in German, not only by *uhú, uhú*, but likewise by *schu hu hu hu*, and by *pu pu*; in Latin by *tu tu*, in Greek, by κικκαβάυ; thus showing us, first of all, Dentalism, change of initial guttural into dental; then Labialism, change of guttural into labial; then Zetacism and assibilation, change of guttural or dental into sh; lastly, aphæresis of initial guttural, as in *uhu* for *kuhu*!

The frog in German says *quak* and *kik*, in Greek βρεκεκὲξ κοὰξ κοάξ.

Pink, in German, is the note of the finch.

Ga ga ga, Dadado, drussla, drussla, is meant for goose; in Chinese, the wild goose says *kao kao*; in Mongolian, *kór kór*.

The cock in German says *kikeriki*, in Chinese, as we saw, *kiao kiao*, in Mongolian, *dchor dchor*. The German hen, if not otherwise occupied, says *gack gack*; while laying eggs, she says *glu glu glu*; when calling her chicks, *tuck tuck tuck*; and yet, when she is called herself, she is addressed by *putt putt putt*, and her little chicks by *bi bi bi*.

The dog says *wau wau* and *bau bau*, sometimes *hu hu*, and *kliff klaff*. When very angry and growling, he says *r*, which the Romans called the dog letter, the *litera canina*.

I am afraid there is no time for more; but I must just add one more German phonograph, that of the nightingale: It is, *Zucküt, zickü t, zickü t! Zidiwik, zidiwik, zidiwik! Zifizigo, zifizigo, zifizigo! tididon, zi zi! Tandaradei!* A great phonetic artist, not satisfied with these popular representations of the note of the nightingale, devoted many days and nights to a careful study of this subject, and the precious result at which he arrived was this:

Deilidurei faledirannurei lidundei faladaritturei!

It would be easy to produce similar words from other languages in order to show, first, how difficult and fanciful all imitations of inarticulate by means of articulate sounds must be; secondly, how, after all, every one of those imitations expresses and can express a single impression only. One might imagine the possibility of a language consisting altogether of such imitative sounds. The combination of two such imitative sounds, for instance, as *bow wow, pooh!* might form a sentence to convey the meaning that a certain dog was harmless, that he might bark but would not bite; but, as a matter of fact, no tribe even of the lowest savages has yet been discovered employing no more than such utterances.

The problem, therefore, which we have to solve, is this—How, if

we start with such interjections and imitations, can we ever arrive at the real elements of language, the residue of all scientific analysis—I mean *the Roots*. If we can account for this transition of interjections and imitations into roots, we have done all that the most exacting sceptic can demand. Analysis of all given language leads us back to roots; experience gives us interjections and imitations as the only conceivable beginning of human utterance. If the two can be united, the problem is solved.

Let us go back once more to the first beginning of conceptual knowledge, for it is here, if anywhere, that the key must be found. The simplest concept is the dual, when we count two things as one. This dual concept can be formed in two ways, either by combination or by abstraction.

If we have a word for *father* and a word for *mother*, then in order to express the concept of *parents*, we may combine the two. Thus, we actually find in Sanskrit, *pitar*, father, *mātar*, mother, *mātāpitarau*, mother and father, i.e. parents. The same in Chinese.[22] Father is *fú*, mother *mù*; *fú-mù*, parents. Again, a biped with feathers is *'kin* in Chinese; a quadruped with hair is *sheu*; animals in general are called *'kin-sheu*. Light is *'king*, heavy *ćúng*; *'king-ćúng* is used to express the concept of weight.

It is clear, however, that this process of combining single words could not be carried on *ad infinitum*: otherwise life might become too short for finishing one single sentence. We may call our parents father and mother, *fú-mù*, but how should we call our family?

Here, the faculty of abstraction comes to our help. A very simple case will show us how the work of thought and speech could be abbreviated. As long as people talk of sheep as sheep, and of cows as cows, they might very well indicate the former by *baa*, the latter by *moo*. But when, for the first time a want was felt of speaking of a flock, neither *baa* nor *moo* would do. As long as there were only sheep and cows, a combination of *baa* and *moo* might have answered, but when more animals were included, their separate sounds were those most to be avoided, because they would have conveyed a meaning which was not intended.

So, again, it was easy enough to imitate the cries of the cuckoo and the cock, and the sounds *cuckoo* and *cock* might be used as the phonetic signs of these two birds. But if a phonetic sign was required for the singing of more birds, or it may be, of all possible birds, every imitation of a special note became not only useless, but dangerous; and nothing but a compromise, nothing but a filing down of the sharp corners of those imitative sounds, would answer the new purpose.

This phonetic process of what I call the *Friction* or *Despecialisation* of imitative sounds runs exactly parallel with the process of the generalisation of our impressions, and through this process alone are we able to understand how, after a long struggle, the uncertain phonetic imitations of special impressions became the definite phonetic representations of general concepts.

Thus, there must have been many imitations of the falling of stones, trees, leaves, rivers, rain, and hail, but in the end they were all combined in the simple root PAT, expressive of quick movement, whether in falling, flying, or running. By giving up all that could remind the hearer of any special sound of rushing objects, the root PAT became fitted as the sign of the general concept of quick movement, and from this concept and this root

[22] Endlicher, *Chinesische Grammatik*, p. 133.

sprang afterwards a number of words in Sanskrit, Greek, Latin, and other Aryan languages. In Sanskrit we find patati, he flies, he soars, he falls; pata-s, flight; pataga-s, and patanga-s, a bird, also a grasshopper; patatra-m, a wing; patāka-s, a flag; pattra-m, a wing, a leaf of a flower, a leaf of paper, a letter; pattrin, a bird; pāta-s, falling, happening, accident, also fall, in the sense of sin, in which sense pātaka-m is more frequently used; possibly even pātāla, the Indian name for hell.

In Greek we find πέτομαι, I fly; πετηνός, winged; ὠκυπέτης, quickly flying or running; ποτή, flight; πτερόν and πτέρυξ, feather, wing, instead of π(ε)τερὸν, π(ε)τέρυξ; also ποταμός, river. Again πίπτω, I fall, instead of πιπ(έ)τω; πότμος, fall, accident, fate; πτῶσις, fall, case, used first in a philosophical, then in a grammatical sense. In Latin we find from the same root, *peto*, to fall on, to assail; to make for, to seek, to demand, with its many derivative applications; *im-petus*, onslaught; *præpes*, quickly flying; also *penna*, feather, the old *pesna*, for *pet-na*.

The number of words derived from this root in modern languages seems endless. In English alone we have *petition*, *petulance*, *appetite*, *competition*, *repetition*; then *pen*, *pinnacle*, *feather*, and many more, all to be traced back, step by step, and letter by letter, to the old root PAT, and to no other root, nor to any of the imitative sounds of falling, out of which PAT was selected, or out of which PAT by a higher degree of fitness struggled into life and fixity.

In one of my Lectures on the Science of Language, I examined in full detail the immense progeny of the root MAR, to grind, to break. This root itself must be looked upon as tuned down from innumerable imitations of the sounds of breaking, crushing, crunching, crashing, smashing, mashing, cracking, creaking, rattling and clattering, mawling and marring, till at last, after removing all that seemed too special, there remained the smooth and manageable Aryan root of MAR.

If we once clearly understand this natural, nay this necessary process of the mutual friction of imitative sounds, representing outwardly the process of generalisation of single intuitions and the origin of abstract concepts, we are prepared to find what we actually do find in the further development of roots. Some roots, being useful for special purposes, retained something of their sharper outline, and became popular on that very account; while others that had reached the highest point of generalisation, and were therefore used most frequently, supplanted parallel roots of a more special meaning.

Again, in this struggle for generalisation, many roots must have crossed each other, and the *summum genus* of going, moving, doing, sounding, must have been reached again and again from very different starting-points.

From this point of view nothing is easier to understand than that, though beginning with the same materials, families, villages, tribes and races, would, after a very short separation, if it took place during the Radical Period, have become of necessity mutually unintelligible. Not only different dialects, and different languages, but different families of language with different roots for their supply, could thus have sprung from one common source; and to deny the possibility of a common origin of the Aryan and Semitic families of speech, from this point of view, would be simply absurd.

Another question which has frequently been asked, viz. whether what are commonly called secondary and tertiary roots were derived from

primary roots, or whether they are remnants of earlier stages in the development of language, does not admit of an equally conclusive answer. If we meet with three such roots as sar, to go; sarp, to creep; sarg, to let go, we have a right to look upon the additional letters p and g as modificatory elements, and upon the roots formed by them, as derived and secondary. This is particularly the case when these additional letters are used systematically, as, for instance, in forming causative, desiderative, inchoative, and intensive roots.

But there are other cases where we must admit parallel roots, representing to us independent attempts of fixing general concepts. If one root was possible, so were others, similar in sound and meaning, varieties, not by genealogical succession, but by collateral development,—a process which has of late been far too much neglected, not only in the Science of Language, but in many other branches of Natural Science.

After what I have now explained, it will, I hope, have become clear to those who may have listened here to my Lectures on the Science of Language, that what I formerly called *Roots*, or *Phonetic Types*, are indeed the ultimate facts in the analysis of language, but that, from a higher and philosophical point of view, they admit of a perfectly intelligible explanation. They represent the *nuclei* formed in the chaos of interjectional or imitative sounds; the fixed centres which become settled in the *vortex* of natural selection. The scholar begins and ends with these phonetic types; or, if he ignores them, and traces words back to the cries of animals, or the interjections of men, he does so at his own peril. The philosopher goes beyond, and he discovers in the line which separates rational from emotional language,—conceptual from intuitional knowledge,—he discovers in the roots of all languages, the true barrier between Man and Beast. I do not ask, like others, for a persuasive appeal from the throat of a nightingale, or for a gruff remonstrance from a gorilla, before I admit that they may be among the ancestors of the human race. I do not wait even, like Professor Schleicher, till I hear a pig say, 'I am a pig,' before I grant that the same blood may run through his veins and our own, and —what is far more important—that his thoughts, may run through the same conceptual channels as our own. Show me only one single root in the language of animals, such as AK, to be sharp and quick; and from it two such derivatives as asva, the quick one—the horse—and *acutus*, sharp or quick witted; nay, show me one animal that has the power of forming roots, that can put one and one together, and realise the simplest dual concept; show me one animal that can think and say *Two*, and I should say that, as far as language is concerned, we cannot oppose Mr. Darwin's argument, and that man has, or at least may have been, developed from some lower animal. I do not deny that there is some force in Mr. Darwin's remark, that both man and monkey are born without language; but I consider that the real problem which this remark places before us is to find out why a man always learns to speak, a monkey never. If, instead of this, we say that, under favourable circumstances, an unknown kind of monkey may have learnt to speak, and thus, through his descendants, have become what he is now, viz. man, we deal in fairy-stories, but not in scientific research. Mr. Darwin says, 'Language is certainly not a true instinct, as every language has to be learnt.' Yes, every language has to be learnt, but language itself never. It matters little whether

call language in this sense an instinct, a gift, a talent, a faculty, or the *proprium* of the species Man. Certain it is, that neither the power of language, nor the conditions under which alone language can exist, are to be discovered in any of the lower animals.

There is one class of philosophers who, in the interest, as they believe, of freedom of inquiry, lay great stress on admitting, if not the reality, at least the possibility or conceivableness of the development of man from a lower animal. What is conceivable, depends, however, quite as much on the conceiver as on the conceived. Nor do I see what, in our case, we should gain by saying, that the transition of a lower animal into man is conceivable, considering that the very opposite, too, viz., the non-transition of any lower animal into man is equally conceivable, and, in addition to this, at least as far as our experience goes, is real. Surely there is something in this word *real*; there is some weight to be attached in every argument to experience, as far as it goes. There are hundreds and thousands of things in nature where we see no reason why they should be what they are, and where we may easily imagine that they might be different from what they are. Why should not trees grow into the sky? why should not birds fly up to the moon? To say that they would die, is saying nothing, at least as far as evolutionist philosophers are concerned; for why should they alone not possess the power of adapting themselves to new environments?

But what should we gain by saying that all such things are conceivable? Would it not be far more useful to try to discover why there are such hard and fast lines in nature; why certain creatures never pass certain limits: why man, for instance, was enabled, or if you like, prompted and tempted, to generalise, to form a world of concepts or roots; to derive from these roots, names of new concepts, to elaborate, in fact, language, and then to make language the foundation of a culture, which, marvellous as it is in our century, is probably the seed only for a future growth, while no animal ever made even the first step in this direction?

To admit everything as possible, may be very excellent in theory, and, as logicians, we no doubt all admit that the sun may to-morrow rise in the west. But I doubt whether that neutral state of mind is the best adapted for real work, and for the advancement of real knowledge. The chemist who, for the time being, denies the possibility, or at least, the admissibility of a decomposition of what he calls elementary substances, and who declares a change of lifeless into living matter as inadmissible, is much more likely to cross the frontier, if it can be crossed, than he who from the beginning looks upon all these distinctions as mere vanishing lines.

If we do not simply play with words, if we take *conceivable* in that sense which it has among professional students, viz., something which is in accordance with known facts, then we ought not to say that the elaboration of language by any animal is conceivable; but, on the contrary, it becomes our duty to warn the valiant disciples of Mr. Darwin that before they can claim a real victory, before they can call man the descendant of a mute animal, they must lay a regular siege to a fortress which is not to be frightened into submission by a few random shots; the fortress of language, which, as yet, stands untaken and unshaken on the very frontier between the animal kingdom and man.

I trust that, in the course of these Lectures, when arguing against the conclusions of the Darwinian school, I have never shown

any want of respect for Mr. Darwin. The results at which I have arrived by a life-long study of language and thought are incompatible with the results to which a minute study of the human body has led Mr. Darwin. One of us must be wrong, and it therefore seems to me mere cowardice to shrink from an open combat. It is true 'that Mr. Darwin has not paid special attention to the problem of language and thought, and that all he says about it may be contained in some six or eight largely-printed small octavo pages.' But I submit that six or eight pages from Mr. Darwin may have more weight than a volume from many other writers. Anyhow, if Mr. Darwin is right, then language is not what I hold it to be; it is not the embodiment of conceptual thought, it is not developed from roots, it is not based on concepts. If, on the contrary, language is what I hold it to be, then man cannot be the descendant of some lower animal, because no animal except man possesses the faculty, or the faintest germs of the faculty, of abstracting and generalising, and therefore no animal, except man, could ever have developed what we mean by language.

Gentlemen, it matters very little who is right and who is wrong, but it matters a great deal what is right and what is wrong. By no one should I more gladly confess myself vanquished than by Mr. Darwin. I feel for him the most sincere admiration; nay, I have never concealed my strong sympathy with the general tendency of his speculations. His power of persuasion, no doubt, is great, but equally great is his honest love of truth; and when I find him again and again admitting that no intermediate links between the highest apes and man have yet been discovered, that the gap between ape and man, small as it is, can be filled with imaginary animals only, I ask myself how it is possible, in the absence of all tangible evidence, that our matter-of-fact philosophers should have listened to such arguments. Unless there were, in fact, some important germs of truth in his philosophy, I cannot think that Mr. Darwin could ever have carried us along with him so powerfully and almost irresistibly.

If Mr. Darwin were more anxious for victory than for truth, I have no doubt he would have handled the argument of language, too, in a very different spirit. He feels the difficulty of language, he fully admits it; but not seeing how much is presupposed by language—looking upon language as a means for the communication rather than for the formation of thought, he thinks it might be in man a development of germs that may be discovered in animals.

Now a clever pleader—of whom we have too many, even in the courts of science — might say, 'Why, does not the very theory you have propounded of the origin of roots prove that Mr. Darwin is right? Have you not shown that animals possess the materials of language in interjections; that they imitate the cries of other animals; that they communicate with each other, and give warning by shrill cries; that they know their own names, and understand the commands of their masters? Have you not "blessed us altogether," by showing how interjections and imitations can be filed down, lose their sharp corners, become general—become, in fact, roots? Surely, after this, Mr. Darwin will be justified more than ever in saying that the language of man is the result of mere development, and that there must have been one or several generations of men who had not yet generalised their intuitions, and not yet filed down the sharp corners of their interjections.'

I have no doubt that such ple

ing would seem plausible in many a court, nay, to judge from the remarks that have been addressed to me both by word of mouth and by letter, I should not be surprised if several members of the jury I am now addressing were to lean to the side of the animals. Some young ladies have assured me that, if I only knew their dog, I should have spoken very differently; that no one who has not been loved by a dog can know what true love and faithfulness are. Some elderly ladies have told me that I knew nothing about cats, and that their cats possess quite as much cleverness, quite as much intellect—as they themselves. The very statement with which I concluded, and by which I wished to bring the whole question into the narrowest compass, when I said that no animal could form the lowest generalisation, could count two, or think and say Two, has been met by the pigeons at Venice. They, at all events, I was told, can count two; for every day, as soon as the clock of St. Mark's strikes two, neither sooner nor later, they assemble from all parts of Venice to be fed on the piazza. Surely, therefore, they can count two. This seemed indeed unanswerable. But fortunately my informant went on to say that the other clocks of Venice strike two first, and the pigeons pay no attention, but when St. Mark's strikes, they all come. What does that prove? It proves that they do not count two, but that their hungry stomach strikes two, and that it is the peculiar sound of the St. Mark's clock, even were it to strike twelve, that brings them together to their dinner.

Our own clock reminds me that it is time to finish. It was not easy to say all I wanted to say in the course of three Lectures, and I am deeply conscious that some of the points on which I touched but lightly ought to have been treated far more fully. I hope to do this on a future occasion, after I have had time to examine carefully the objections which these Lectures have elicited, and may still elicit. But I trust I have said enough to show you the Science of Language in a new light; and to make you see its paramount importance for a truly scientific study of Psychology, and for the solution of problems which hang like storm-clouds over our heads, and make our very soul to quiver.