ART. III. — 1. *Die Darwinsche Theorie und die Sprachwissenschaft. Offenes Sendschreiben an Herrn Dr. Ernst Haeckel*, von AUGUST SCHLEICHER. 8vo. Weimar. 1863.

2. *Ueber die Bedeutung der Sprache für die Naturgeschichte des Menschen.* Von AUGUST SCHLEICHER. 16mo. Weimar. 1865.

3. *Lectures on Mr. Darwin's Philosophy of Language.* By PROFESSOR MAX MÜLLER. Delivered at the Royal Institution, March and April, 1873. Printed in Fraser's Magazine, and reprinted in Littell's Living Age, 1873.

THE doctrine of evolution, of the connected and progressive development of organic life on the earth, of the transmutation of animal and vegetable species, is, as every one knows, a leading subject of inquiry and controversy in this latter half of our nineteenth century. Hardly any one reads and thinks so little that he has not felt called upon to make up his mind, or at least to ask himself, on which side of the controversy he will take his stand. Yet at the same time there are comparatively few who will venture to take a decided stand, or who will feel themselves qualified to defend either side against attack. Though from some points of view the new doctrine may seem to be carrying all before it, from others a very different impression will be obtained. There is still a powerful party of opponents who may yet, for aught that we outsiders can say, prove the nucleus of a counter-movement that will sweep backward over the whole field. It becomes us to keep our minds open to conviction on either side, and wait till the biologists shall have fought their fight more nearly out; then we can see whether we will join the victorious party, or summon them to a new contest on other ground. Meanwhile, there are some subsidiary questions which do admit of settlement, and whose settlement will help clear the way for the final decision.

One of these subsidiary questions concerns the bearing of language on the controversy. Wonderful things have been brought to light by the aid of language during the past fifty years, in reference to the prehistoric history (if the seeming contradiction in terms be allowed) of the human race. And it cannot but have occurred to many to ask whether linguistic science, which has done so much, has not also a competent

judgment to pronounce in reference at least to the last asserted step of the infinite series of transmutations, the development of man out of a lower, a simioid animal. What the leading representatives of this science may have to say, either as to the point in question or as to their own authority as linguists to sit in judgment upon it, will assuredly be listened to with interest by the public.

It happens, now, that two of the best-known philologists of the day have expressed themselves upon the subject of the bearing of linguistic evidence upon the Darwinian theories, at considerable length and with unquestioning confidence, neither of them having the least doubt of his competence as a judge, and each claiming to settle the whole controversy beyond a peradventure. Both these men are Germans: the one, Professor August Schleicher of Jena, was long a leading authority in comparative philology, and hardly another scholar, save Bopp and George Curtius, has impressed himself so deeply upon that branch of knowledge, or done so much toward determining its prevailing doctrines; the other, Professor Max Müller of Oxford, is so well known to all readers of English that it is unnecessary to waste a word in describing his position and claims to attention. Unfortunately for the general public, these two eminent scholars have been brought to precisely contrary conclusions. Schleicher is a firm believer in Darwinism, and he even undertakes, and with a success entirely satisfactory to himself, to prove its truth by the evidence of language. Müller rejects Darwinism, and he lays himself out to demonstrate by the same evidence that it is not and cannot be true; and he, too, is equally confident of the triumphant success of his demonstration. Such being the case, there is a yet more obvious call for a reopening of the discussion, and an examination of the arguments by which such discordant results have been reached.

Upon Schleicher, in the first place, I do not need to spend much time. The pamphlets in which he puts forth and defends his views I have already subjected to a somewhat detailed criticism,* which need not be even recapitulated here. His argu-

* See Transactions of the American Philological Association for 1871, pp. 35–64; and my Oriental and Linguistic Studies (New York, 1872), pp. 298–331.

ment lies in a nutshell. Languages, he declares, are living organisms, with their own laws of development, and not dependent on the beings by whom they are used. Since, then, it is beyond all question that languages do develop and become transmuted, since a single stock-language ramifies into a variety of tongues, exhibiting differences as marked as those which distinguish the genera and species of animals and plants, it cannot be denied that organic beings do vary as rapidly and widely as the most eager Darwinian could ask; and if organic beings of one class, then, of course, those of other classes also: *quod erat demonstrandum.* The simple and obvious answer to this is, that languages are not organisms except by a figure of speech, and that therefore no conclusion can be carried from them over to real organisms. If Schleicher's view of the nature of language had any other adherents worth noticing, it might deserve a more elaborate refutation in this place; but although some linguists have pushed the instructive parallel between the so-called organic life of language and that of a plant or animal so far as almost, or somewhat, to confuse and mislead their own minds, no one but he, I believe, has ever deliberately attempted to make it the foundation of a scientific argument, much less to draw from it inferences of such wide reach and startling importance; and I believe that I am justified in claiming the assent and approval of the leading German philologists for my refutation of his paradoxes. Schleicher was a comparative philologist of immense learning, surpassing ingenuity, and a rare power of systematizing and ingenious construction; but his discussions in the domain of linguistic science show a rashness and unsoundness which culminated in the essays to which we are here referring.

We turn, then, to consider Müller's views, and the arguments by which they are supported.

It is never entirely easy to reduce to a skeleton of logical statement a discussion as carried on by Müller, because he is careless of logical sequence and connection, preferring to pour himself out, as it were, over his subject, in a gush of genial assertion and interesting illustration. I hope, however, to succeed in presenting his reasonings in abstract without doing him or them any injustice.

And, in the first place, it seems clear that Müller feels impelled to combat the Darwinian theory as to the descent of man by an overmastering fear lest man should lose, otherwise, his proud position in the creation. Thus, he says in the first lecture: "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." The same statement is put more clearly in the second lecture: "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." Few, I believe, of those who agree with Müller on the general question will hold with him in this particular; and any one must see that his state of mind is not one which will conduce to a calm and dispassionate, a scientific, discussion on his part. A man may be justified in fighting tooth and nail, by fair means and foul, against an absolute identification in point of intellect with the lower animals. The evolutionists, certainly, are actuated by no such dread. To them, the difference of endowment between man and his inferiors is — just what it is; something very substantial and very vast, which nothing can reason out of existence or reduce in dimension. So, also, the difference between the mind of the dog and that of the bee or ant, between that of the bee or ant and that of the oyster, is substantial and vast, and may, perhaps, be even greater than the other; as, in fact, it is in outside seeming certainly greater. It is all a matter for careful consideration, whether a continued chain of progression will lead from one of these conditions to another; and the dog may have as good a right to complain of Müller for putting him and the oyster into the same class of "animals" from whom man must be made out essentially different, as Müller to complain of Darwin for putting man and the dog together. But Müller is particularly severe upon the assumption of "insensible gradations" to bridge over any of the differences in any of the departments

of nature, animate or inanimate. Thus he says (second lecture): —

"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. . . . . 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."

Now it may be not quite fair to hold a reasoner to an illustration as if it were a deliberate argument; but I wonder that Müller's own chosen illustrations here did not show him, as they cannot help showing many of his readers, against what a phantom he is fighting. Where are the "lines and laws of nature" which separate, for instance, the high from the low musical tone? I know of none except the lines and spaces of the staff; and they are products of art rather than of nature. If Müller is satisfied with the full and complete recognition of the difference between white and black, hot and cold, high and low, and their like (such as small and great, young and old, rich and poor, handsome and ugly), and considers the Kosmos and the Infinite as insured thereby, then there is no obstacle in the way of his becoming a Darwinian; for the Darwinian regards, rightly or wrongly, the difference between man and ape as entirely analogous with the rest, — that is to say, a mere difference of degree. Müller appears not to apprehend correctly the meaning of the "insensible graduation" used by the evolutionists as a factor in their arguments. He proposes (by a characteristic and telling figure) to draw upon the same bank which furnishes the million intermediate grades for eyes that will magnify their distances a million times, and is confident that his draft will be honored, and that the distances will continue to appear as great and insuperable as at present. But in this he overlooks the fundamental principle underlying the Darwinian theory — namely, the undoubted and undisputed fact that species do actually vary in nature. Between the

mind of a Newton or Cuvier and that of a dull English or French peasant there is a difference which does not need to be magnified a million of times in order to become conspicuous; yet Müller would hardly deny that the two are specifically related, and that the one might even descend lineally from the other. An "insensible graduation" is simply one of which the intervals are not greater than may be found actually occurring in nature between acknowledged kindred; and the question under discussion is, whether a succession of such intervals, following one another in the same direction, is capable of covering the spaces that separate the different animals from one another, — even man from his inferiors.

Upon such a question, especially at this stage of its discussion, opinions cannot but be at variance; and possibly they may always continue so. It belongs especially to the biologists to settle, and until they shall have arrived at a greater unanimity, the outside world will be justified in taking the affirmative or the negative according to their various bents. There is a considerable and respectable party who maintain the inviolability of specific differences, and refuse point-blank to admit that any transmutation is possible, in less or greater degree. It is not upon this broad ground that Müller elects to make his opposition; he only steps in between man and the creatures of next lower grade, and offers there his veto. As linguist, he claims to have found in language an endowment which has no analogies and no preparations in even the beings nearest to man, and of which, therefore, no process of transmutation could furnish an explanation. Here is the pivot upon which his whole argument rests and revolves.

It seems clear, however, that Müller cannot expect to daunt the evolutionists by setting up this obstacle in their way. There are other great steps upward in the scale of endowment which they will deem as hard to have taken as this. If they are ready to admit as possible a rise from the fixedness and unimpressibility of the polyp, for example, a mere link in the great chain of eater and eaten, to the free locomotion and the free intelligence of some quadrupeds, they will be likely to make little difficulty in adding on a power of speech. There is nothing, they will say, in the polyp, or even the reptile, to hold

out promise of a creature that shall soar and sing like the lark or the nightingale. And it savors of exaggeration — perhaps natural and excusable, but yet inadmissible exaggeration — in the linguist to set up the particular endowment which is the subject of his studies as the one of all others which cannot have come by addition to its predecessors. He must argue the case with moderation and acuteness, on strict scientific grounds and by scientific methods, if he is to convince our judgments.

And I, for my part, do not think that Müller satisfies these reasonable requirements in any tolerable measure. So, for one thing, with the way in which he sets up language as *the* distinctive quality, the "specific difference," of man. Any one would naturally infer, from his account of it, that language is a unitary endowment, a gift like that of sight or hearing, and that it is all, or so nearly all, that makes man's superiority, that any given animal, plus speech, would equal man. To talk thus about it is not to talk science, even linguistic science. I should be a little troubled at believing that I held my position so exclusively by one right. It would not be without a certain secret shudder that I should join in the laugh at Schleicher's "joke," twice quoted by Müller in these lectures: "If a pig were ever to say to me, 'I am a pig,' it would *ipso facto* cease to be a pig." For wonderful things have happened; there is now and then a mouse that sings; and there are learned pigs; what if some time one should arise so learned as to compass the bodeful declaration of pighood which would be in effect a proof of manhood, and so should push us from our throne? I, however, can reassure myself by reflecting that there are many other things a pig cannot do and a man can; if his pigship were to fashion a violin and play a tune upon it, or draw a picture of his respectable mother, or even cut down trees and build himself a house, I should hardly dare to call him by his old name; and if he were to address me in good pigwigian speech, I should think that his identity did not cease by that act, but must have ceased long before.

In arrogating such overwhelming importance to language as a human characteristic, Müller claims both too little and too much. Too little, because the superiority of human endowment comprehends vastly more than that. It is, for example,

every whit as characteristic of man to increase and supplement the capacity of his hands by using tools; and nothing else that he does bears so pervading and instructive an analogy with his use of words. Yet no one would be justified in setting up the use of instruments, in a concrete way, as an impassable barrier between man and brute. It would be necessary, rather, to analyze the individual capacities of which this is the joint effect, and to examine narrowly what beginnings of them, or indications looking toward them, are to be found in any of the inferior races, and by what deficiencies they are counteracted and futilized. And it is precisely by neglecting to do this thing with reference to language that Müller claims too much. It is a very cheap and easy thing to assert, as he does, that, "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": nobody will think of disagreeing with him here; if the development of language were within the reach of any but man, it would long since, doubtless, have taken place. When, however, he claims that an increase of the endowments of any animal in such manner and degree as to put language within its reach is also inconceivable, a wonder as compared with which he could much more readily hold "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," he cannot but seem to many to be using the exaggerated and unscientific phraseology of mere prejudice and presumption, and they will have the fullest right to look sharply to discover on what basis of linguistic philosophy such a view reposes, and by what arguments he will attempt to establish its soundness. Nor do I think that they will be reassured and satisfied by the result of their inquiry. Let us examine and see.

In the first place, Müller prepares his ground by denying categorically that we can know anything about the mental states and mental acts of the lower animals. "If there is," he says, "a *terra incognita* which excludes all positive knowledge, it is the mind of animals." "The whole subject is transcendent." There is a compromise among philosophers of the last century, "declaring the old battle-field, on which so much ink has been shed over the question of the intellect of

animals, to be forever neutralized," and it "ought hardly to have been disturbed, least of all by those who profess to trust in nothing but positive fact." It is calculated to make a man of science of the nineteenth century a little impatient to be told that his predecessors of the eighteenth, which he almost regards as the age of darkness, have settled any question, in relation to the animal or vegetable or mineral kingdom, so thoroughly that he must not venture to reopen it; or that there is any phase of animal life and activity into which he may not look with the hope of learning at least something about it. By an error which is not uncommon with him, Müller expands a partial impossibility into a total one; because we cannot fully comprehend the mental processes of even the animals nearest to us, he would claim that we can know absolutely nothing about them. In his sense, it is impossible to know anything about even our fellow-men. Who, for example, can be sure that, if he had a friend's sensorium in his brain instead of his own, he would get precisely the same sensation of color as at present from the green grass and the blue sky? The point is one which we can never bring to a test; "the whole subject is transcendent"; yet we content ourselves with the inferences we are able to draw from the like conduct of other men under conditions like those we experience, and we feel that we know something about them. And the same sources of knowledge stand us in stead with regard to the brute. We believe that the horse sees green, and tastes water, and feels pain, as confidently, and on nearly the same grounds, as we believe that our neighbor does the same. We are satisfied that we appreciate the feeling that makes puppies and kittens play, or the dog rub itself against its master, or look affectionately up into his face and wag its tail. It may be very unphilosophical; but it is part of the same common-sense philosophy which makes us believe in our own existence, and in that of beings and things external to ourselves, and of which every metaphysician that says "I" and "we" and "you" and "they" virtually acknowledges the truth, however firmly he may persuade himself that he has assurance of nothing in the universe save his own states of mind, if even of those. We have, it is true, one additional source of knowledge respecting our fellow-men,

namely, their speech; and the advantage this gives us is very great; so long as Müller will let us look upon it as a matter of degree only, he can hardly claim anything in its favor which we shall not be disposed to grant; but it is not the only source, nor is it infallible; it requires to be both supplemented and controlled by that same observation of conduct under conditions which is all we have to rely upon in the lower animals.

But Müller's assertion of our boundless ignorance as to the mental states of brutes seems intended by him to embarrass only his opponents' reasonings, and not his own; for he goes on to maintain, in an equally categorical manner, that "animals receive their knowledge through the senses only"; that "conceptual knowledge" is denied to them; that "no animal except man possesses the faculty, or the faintest germs of the faculty, of abstracting and generalizing." This doctrine of the incapability of any animal but man to form a "general idea" is very familiar to all who have read Müller's works; and many, probably, like myself, have looked with interest to see on what grounds he holds it, without ever discovering them; here, also, notwithstanding its pivotal value in his argument, he is equally chary of its proof; he only asserts that no "philosopher of note" denies it, and quotes as examples Locke and Schopenhauer. We do not, however, as I think, need to let ourselves be put down once for all by such a citation of authorities, nor to trouble ourselves to draw up an array of opposing authorities; votes are a less acceptable method of settling a question like this than a view of the facts involved. And I must say that I do not see how the formation of general ideas, within the narrow limits of their understanding, can possibly be denied to the lower animals; it is a necessary attribute, not of the higher powers of human reason only, but also of the humbler quality of animal intelligence: nothing that we can call intelligence is to my mind conceivable without it. What is there so wonderful and exalted in the formation of a general idea? It need imply no more than the power of being so impressed by a thing in the assemblage of its qualities that on seeing another like it we recognize it as being like, and expect the same acts or effects of it. Let us examine a little Müller's own illustration. A child, he says, that for the first

time sees an elephant, however much he may go about it and inspect it, does not *know* the elephant. We might dispute, I think, whether the child does not get a beginning of knowledge from such a first inspection; but let that pass. If, then (we are told), the child sees another elephant, or the same one a second time, and *re*cognizes the animal as that, or like that, 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*." There seems to be a little inconsistency here. The child recognizes the animal, and knows it, and yet his act is not cognition; he remembers his former perception, puts it alongside his present, and apprehends their likeness, and yet it is only remembering. Here, again, Müller ignores the gradual formation of a general concept. He insists on black and white, high and low, without any degrees between them. For he goes on to point out that an older child, on seeing an elephant, even for the first time, knows it for an animal; and here, and only here, does he acknowledge that a concept has been formed. I maintain, on the contrary, that the idea of an elephant, which the child forms on the basis of two or more sights of the animal, is just as truly a general concept as that of an animal; it only is not one of so high an order; it calls for less experience, less penetration, less judgment, than the other. And Müller, confessing that " the animal intellect, according to the ordinary interpretation, would go as far as this, but no further," virtually concedes the point in dispute, and allows the formation of general ideas by the animals. He then advances a step, and exhibits to us a young man of some scientific training judging the same creature to be a vertebrate, a mammal, a pachyderm, a proboscidate, and finally, an object; and seems to think that, as he rises higher and higher in the scale of what is possible only to the highly trained human intellect, he is more and more strengthening his dogma, that nothing below man exhibits " the faintest germs of the faculty of abstracting and generalizing." I cannot see it in that light; for me it is sufficient to know that an animal like a dog perfectly knows what a man is, never confounds it with

any other creature, knows what to fear and hope from it, in order to hold, with a confidence that is proof against all authority, the doctrine that an animal lower than myself possesses such germs of the faculty of generalizing as are distinct only in degree from those which I possess. If the dog had language, he would as certainly say *man*, or something equivalent, and would apply it as correctly, as any of us do. We might illustrate with a hundred other equally clear cases, but one is as good as a hundred. No doubt we should by and by come to a limit, where the case would be doubtful. I am very certain that neither dog nor elephant nor monkey could ever rise to the conception of a vertebrate, any more than many races of men with grammars and dictionaries have done; as to that of an animal, I should not at present venture to hold a confident opinion; certainly I should be loth to deny it.

There are other points where Müller seems to mistake the limit between animal intelligence and human reason, and to claim solely for the latter what, in an inferior degree, belongs equally to the former. It is so with the matter which occupies his attention through nearly the whole of his first lecture. There he endeavors at great length to send the naturalists, the biologists, back to the study of Kant, and to the discussion of the opposing theories of Hume and Berkeley, warning them that otherwise they cannot expect their opinions to fit in as harmonious parts in the great fabric of human knowledge. Whether they will much heed his exhortations may be doubted. They are an opinionated set of men, so busy in the investigation of what they deem to be facts, and so convinced of the importance of the results they are reaching at every step, that they are a little impatient of being interrupted by people who want them to settle first what a fact is, and whether there is any reality in all that is busying them. They have a short and easy, even if a very unphilosophical, way of settling these ultimate questions, — namely, on the principle, familiar enough to them, of accepting the hypothesis that on the whole best explains the facts, and pushing directly on to the accumulation and classification and comparison of more facts. On this ground, they hold that a man is a being set down in the midst of a universe composed of beings and things just as real as he

himself is, and that he is by his senses and his reason put in such relations to this universe as enable him to learn something about it; that he is essentially an intelligent being, capable of receiving information and acquiring knowledge. That the knowledge gained is imperfect, in part delusive, mixed with error, they freely confess. They know, for example, that the sensations of color, of sound, of heat, are as subjective as that of pain; that these are only the ways in which our sensitive organism is made cognizant of the fact that other bodies are in certain states of vibration; and, just as the absence of an ear would wellnigh hide from us the fact of sonorous vibration, so the acquisition of new senses not possessed by us might probably enough open to us a host of things of which we now have not the faintest conception, though they are as real as what we do perceive; even as Neptune and Uranus, and the rings and moons of Saturn, were real for ages before a single intelligence upon earth had so armed its power of observation as to discover them. They believe that theirs is the true and fruitful method of increasing human knowledge and eliminating human error; and they believe that metaphysical reasoning will never succeed in pushing more than an infinitesimal part of mankind off this basis; that even the metaphysicians really stand upon it; and that metaphysical science comes gleaning after physical, compelled to accept and work up in its way the latter's results.

Whether they are right or wrong in all this, they doubtless will not, as I have said, be driven off their position, or shaken in it, except by a more powerful assault than Müller makes upon them. And especially, they will not be led to acknowledge the paramount authority of the Kantian doctrine, in its bearing on the question of the development of man. What Müller claims most confidently and demonstrates most triumphantly by his first lecture is, that the categories of space and time, and the law of causality, whereby we postulate certain existences external to ourselves as the producers of certain effects in us, are elements of knowledge furnished by our mind itself, not received from without. This we can well afford to grant him, for all the purposes of the main question that occupies us. For no zoölogist, we presume, will think of

questioning that the minds of some of the lower animals furnish them precisely the same elements. That a dog, and many another animal, apprehends with all possible distinctness the existence of other beings than itself, it does not seem as if Müller even would have the boldness to deny; nor do the same animals fail to realize, as the basis of life, that succession of events, and that juxtaposition of objects, which are the foundation and the practical phase of what we call time and space. That the full conception of space and time is not too difficult an abstraction to be realized by even the highest animals I would not assert; but it may be confidently maintained that they possess here even more than those "faintest germs of the faculty of abstracting and generalizing" which Müller would fain deny them; germs enough to develop, with an increase of intelligence and the consequent acquisition of language, into all that belongs to us.

If we examine the extract from Locke made by Müller, we shall see that the former denies to brutes the power of forming general ideas, simply on the ground that they do not talk. He says, "The having of general ideas is that which puts a perfect distinction between 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." The fallacy lurking here is the assumption that, if general ideas were formed, they could not help finding expression in words; and that I can see no good ground for. Müller does the same thing in his own way, as follows: —

"Language, such as we speak, is founded on reason, reason meaning for philosophical purposes the power 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, namely, 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."

All the assertions here are such as will be disputed by men of another way of thinking than our author. Reason, they will say, is that degree of power over general concepts which we possess, and which is so much higher than anything possessed by brutes that it is properly called by a different name. Again, "handling" general concepts is an ambiguous and unscientific phrase, and involves, perhaps, more power than "forming" them; we might fairly enough say that the effective management of ideas is possible only by means of a system of signs, which the brute confessedly has not. But to put the formation of general concepts at the very top, and the power of weighing probabilities and calculating results, even genius itself, far below, is to turn the natural order of things topsy-turvy. I wish Müller would once attempt to show how the results of past experience are to be applied to the regulation of present action save through the medium of general ideas. Nor, once more, is articulated language, or language of any kind, the only intelligible manifestation of reason. There is rational conduct as well as rational speech, and it is quite as effective as speech. There could be no building, no weaving, no instrument-making, no art, without reason, but it is conceivable that they should exist without speech. All these, speech included, are parallel capacities of the rational being; each needing for its development and education the fostering care of circumstances and the accumulation of general and long-continued experience; of different degrees of elevation and importance; and each, in its own way and measure, helpful to every other. Müller himself acknowledges, nearly at the beginning of his lectures (by a nearer approach to the truth than we have ever noticed him to make before), that, "though the faculty of language may be congenital, all languages are traditional." Unless, then, reason is a matter of tradition rather than of natural gift, a man may fail to have had any language handed down to him, and so may fail to give what Müller regards as the only possible evidence of reason, and yet may be rational. There are especially two cases in which this failure may and does take place, — that of the solitary and that

of the deaf-mute. Of these two, Müller has repeatedly maintained that the latter does not possess reason; and I have always thought it a complete *reductio ad absurdum* of his theory of language and reason; nothing can be right which conducts us to such a paradox as that. At present he shows signs of drawing back. He ventures no assertion on his own responsibility, but tells us that, "according to those who have best studied this subject, it is perfectly true that deaf-and-dumb persons, if left entirely to themselves, have no concepts, *except such as can be expressed by less perfect symbols.*" The statement has a tinge of bathos in it; it ought not to take much profound study, one would think, to bring to light a truth so obvious as that an unfortunate who is cut off from nearly all the ordinary means of instruction will fall far below his fellows in mental training. And the "those who have best studied this subject," as appears from the reference given, are a single French physician, who maintains only so much as this: that those who by congenital mutism are restricted to their own individual experience retrograde toward the primitive savage condition of man, and that their minds are unable to develop themselves. I think that the gentleman in question would be somewhat astounded, if he knew that he had been relied on as sole voucher for the doctrine that human beings with numb auricular nerves are destitute of reason. And the last clause of Müller's statement, which I have italicized, annuls its whole force. If the deaf can form concepts and express them by any symbols at all, whether more or less perfect, they can, according to Müller's own view, reason. He himself points out, only a paragraph or two later, that the kind of symbol is a matter of wholly secondary consequence; the essential thing is that any symbols are made, and that through their aid general concepts are "handled."

There is another of his old doctrines, closely connected with these, to which Müller seems minded to adhere more tenaciously, namely, that thought without words is impossible; though, after all, some of his expressions about it are so loose that we cannot quite tell what he means. Thus, in the very form which he gives to the question itself, "Are concepts possible, or, at least, are concepts ever realized, without some form or

outward body?" Here are two discordant things mingled together as if parts of the same view. It may be possible for concepts to be formed, and yet not realized; that is to say, not so put before the consciousness of the conceiver that he knows, or "realizes," what he is doing. And that would be very nearly my view: thought is possible without language, but reflection is not; the thinker cannot hold up his thought before his own mental eye (at least, otherwise than in the most imperfect way) without the aid of symbols; words bring thought under the full review of consciousness. Müller answers his question in the negative, and goes on: "If the Science of Language has proved anything, it has proved that conceptual or discursive thought can be carried on in words only." Here again he limits "thought" in such a way as to render his meaning unclear without some explanation. Perhaps by "conceptual or discursive thought" he intends some of that higher kind of abstract reasoning which any one would admit to be impossible without signs, even as the higher mathematical processes are impracticable without figures and other symbols. Perhaps there is another and a simpler kind of thought, which is nevertheless thought, of which even he would allow the unassisted mind to be capable. If he does not mean this, many students of language will maintain that their science proves just the opposite of what he claims. What follows is more explicit: —

"We can, by abstraction, distinguish between words and thought, ... 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."

This illustration is not at all to be found fault with on account of its homeliness; the more homely and familiar, the better, provided only that it be used as an illustration, as an auxiliary to argument, not as a substitute for it, and provided that there be such an analogy between the things compared, in cer-

tain essential respects, that the one fairly casts light upon the other. But, so far as I am aware, this is the nearest approach that Müller has ever made to giving a reason why we should believe that thought is impossible without words; and when it comes to assume thus the character of an argument, when we are called upon to believe that thought cannot exist without expression *because* an orange is never found without a skin, then we cannot help examining narrowly the analogy upon which so much is built. And I think we shall find it not quite broad and solid enough to sustain so great a superstructure. Orange-peel, in the first place, is of the self-same substance, and produced by the self-same forces, as the rest of the orange; it is a part of the orange itself; while, on the other hand, a conception, a judgment, a volition, a fancy, is an act of the mind, while a word is an act of the body, just as much as is a gesture, or a grimace, — by either of which, indeed, as our author points out, the place of a spoken symbol may be supplied. It is, to be sure, an act of the body under the government and direction of the same mind that forms the thought; but so also the orange-tree makes roots, and stem-wood, and bark, and leaves, which are not orange-peel, though they may come to be used to wrap oranges in. Again, every orange has its own particular skin, and of one unchanging form and size and thickness and color; while the thought and the word are so independent of one another, that either may be altered to any extent without modifying the other; the word may be reduced to the driest vestige of its old self, and the contained idea be as rich and juicy as ever; and the substance of the idea may shrivel away to the emptiness of a mere sign of formal relation, while the word continues to make a fair show. Moreover, as many languages as there are, so many different words for the same thought, words as different as orange-peel and lemon-peel, and apple-skin and potato-skin, and ox-hide and fish-scales. When the Normans came into England, a long time ago, they brought with them a store of skins of a different growth, in which English oranges finally came to be to no small extent enclosed. And nowadays, when our tree produces new fruit, we go to certain countries of Southern Europe, where there was abundant production in old times, and trim and piece to-

gether out of their dead material wrappings for our fresh acquisitions. Truly, the comparison seems to halt a good deal, when we try to make it keep even with these characteristic and essential facts in the history of our language, and of other languages. Words are much less like the natural coverings in which oranges grow than like the boxes in which these are packed for transportation. Oranges cannot be conveniently "handled," and laid up, and sent about, and dealt in, without such cases; and every community that grows them provides also cases for them, of such material, and in such forms, as convenience and custom prescribe. Of course, this analogy also has its weak sides, and could easily be made to appear absurd by pushing it too far; I only claim that it is enough truer than Müller's to constitute a satisfactory refutation of the latter; and to justify those who hold the doctrine of the merely external union of idea and word in waiting with undiminished confidence to see whether anything less easily disposed of can be brought forward against them.

That character, certainly, does not belong to the paragraph in which our author attempts a little later to hold them up to ridicule, imagining them sitting down to prove their view experimentally by deliberately thinking of some familiar and long-named object like a dog, without help from its name. The laugh, with most of his readers, will be only against himself, for such a ludicrous misapprehension and misrepresentation of his opponents' views and methods of proof. If it were prevalently believed (and really there is not so absolute an unlikeness between the two doctrines) that a man's shadow was a mysterious and ineffable part of him, brought into the world with him and necessary to his existence, any one might just as suitably ridicule the philosopher who should try to show the contrary, by depicting him in the attitude of making frantic attempts to jump off his own shadow, or run away from it. Every one who knows anything of language knows that in our mental habits words and ideas have become so welded together as to be wellnigh inseparable; and that it is especially in the deliberate, conscious, reflective action of our minds that the word most unavoidably accompanies the thought. One must catch the mind off its guard, as it were, or must observe

it working out and assimilating new knowledge, and casting about, often in the most open manner, for new designations for such knowledge, or must notice how, under the framework of its speech, it is drawing distinctions and pointing conclusions which words are then stretched or narrowed to cover, if he would appreciate what is meant by the mind being independent of words save as it uses them for its instruments and auxiliaries. Observation, comparison, perception of resemblances and differences, — these, in their degree, are the characteristic operations of human minds ; and there is not one of them which, in its simpler stages, is not independent of speech ; only speech enables us to rise into ever higher stages of mental action, to deal with subjects which would otherwise be quite out of our reach. If, standing under a fruit-tree, I compare two sticks, and choose the longest with which to reach the bending branches, I have done an act which is distinctive of human reason, which no other animal is capable of, and which is nevertheless wholly independent of language ; it and its like might have been done a million times before there was such a possession as language among men. If, instead of the familiar dog, Müller had brought before him some wholly strange animal, he would find that he could shut his eyes and call up the image of it readily enough without any accompanying name ; and though he would at once proceed to examine it by a variety of customary tests, all of them connected with names, this would only be repeating known processes of judgment, every one of which had at some previous time, when brought distinctly before the consciousness, received its name, for convenience of " handling " ; and every act of testing, and affirmation of likeness or unlikeness, would be an act without words ; he might discover some new and highly peculiar quality in the creature, which he would proceed to name and set before future observers as an additional test by which they should try future discoveries. That is the way that knowledge grows, by observations and deductions of which each one, after it is made, is incorporated in a name or names, and taught by him who has made it to the rest. Look, further, at the coarseness of such a word as *sun*, in comparison with the intricacy, the subtlety, the pregnancy, of the idea which it designates ; no small part of

human culture has gone to the reinforcement of the idea, while the name remains as simple and insignificant as of old. So, again, the word *tact* is a foreign one, borrowed out of the vocabulary of a dead language, and means simply "touch," a physical capacity; but all the influences of a long-trained experience of life and of refined society have helped to give it its meaning. To be sure, the possession of language is among the most powerful of these influences; without it there would have been little knowledge and no culture; but the theory that places the idea in slavish dependence on the word is overthrown when we see that an infinity of causes go to determine the growth of every idea, with no corresponding effect upon the word.

I am convinced that Müller does not yet quite understand what is implied in the theory of the antecedency of the idea to the word, in the minds of those who hold that theory. In his various attempts to characterize it, he has never done it any sort of justice. He is so penetrated with a sense of the supreme importance of language to man, that he cannot bear to admit anything which seems to him to derogate from it. And he is not ready to see that there remains to language all the importance that the most exacting linguist could demand, even if we regard it as only the instrument of which the mind avails itself in order to do infinitely more and better work than it could do without such an instrument. He will have all or nothing; language must be not only language, but also thought, reason, mind itself. In this he unwittingly takes the ground of one who should be so struck with the wonderful achievements of steamships, locomotives, and cannon, of weaving-machines, pin-making machines, and mowing-machines, as to deny that there is any power or skill in the bare human hands. Strong in the assurance, attainable by even a very superficial study of human action, that the thinking which we actually do could not be carried on without words, he denies that any thinking is possible but by their aid; resembling in this a mathematician who, because the product of $57{,}493 \times 79{,}628$ cannot be obtained without written processes, should declare that the sum of $1+1$ is not discoverable but by their aid.

I do not at all despair of Müller's finally coming to see this

himself, and of his explaining that, when he denied the antecedency of ideas to words, he only meant to deny that men elaborate a great store of ideas, and then, by an afterthought, proceed to invent names to be applied to them; and that, when he maintained that concepts could not be formed and handled without signs, he referred particularly to the handling, and also to the fact that, when a concept has been formed, the mind cannot help seeking a sign for it, and using this sign as a necessary standing-ground from which to rise another step. For he has in these lectures done a thing quite analogous with that. Those who have read his first "Lectures on the Science of Language" (and who that is interested in the study of language has not?) will doubtless remember that in his last lecture he seemed to scout and to ridicule those who believed that interjections and imitative sounds were or might most probably have been the first starting-point of language, giving to their views the nicknames of "pooh-pooh theory" and "bow-wow theory," which have ever since continued current, influencing the opinions, probably, in some measure, of that part of the community with whom denunciation and ridicule go for more than argument; and also that he seemed to put forward another theory, to which some successful nomenclator (I think, in an English literary paper), normally following up the genesis of the idea with the production of a word by the aid of which it should be properly "handled," immediately applied the title of "ding-dong theory." From the later editions of the "Lectures" we have learned that we were under a misapprehension as to this second point; that the author never intended to propose the theory, but only to quote it, out of respect to the little known German professor who originated and held it; and now we find that he has completed his retraction by going over to the party of the bow-wowers and the pooh-poohers. Roots, he tells us, "represent the nuclei formed in the chaos of interjectional or imitative sounds"; and, yet more explicitly, "interjections and imitations are the only possible materials out of which human language could be formed"! We can hardly say that he has gone fairly and squarely over to those against whom he had before contended, because he still endeavors to establish a distinction between himself and them: they hold

that words come from interjections and imitations, while he holds that words come from roots, and only roots from interjections and imitations. In this, however, I believe that he simply misapprehends their position; they would not in the least object to the interposition of a radical element between imitation and word, and, so far as I know, all accept the doctrine which is as good as forced upon us by the study of linguistic history, — that behind the development of grammatical structure, the formation of words and parts of speech, lies a radical stage for all human speech. They have the right to claim that his former contempt reposed solely on ignorance; that just so soon and so far as he has understood their views, he has made them his own.

The disquisition with which our author winds up his third lecture seems to me not less aside from the true point, and inconclusive, than the arguments by which it is preceded. He reiterates his claim that the roots of language are *the* "true barrier between Man and Beast." He challenges us to show "only one single root in the language of animals, such as *AK*, 'to be sharp or quick.'" He offers to confess that man can have developed from some lower animal, provided we can find him "one animal that can think and say 'two.'" He stigmatizes as fairy stories, and not science, the doctrine "that under favorable circumstances, an unknown kind of monkey may have learned to speak, and thus, through his descendants, have become what he is now, namely, man," — and so on. Let us only read "*a* true barrier" for "*the* true barrier," and not even the most ardent Darwinian will need to dispute a single one of these opinions; he will only ask what they have to do with the real question at issue, namely, whether an increase of the intelligence possessed by some of the lower animals, in the same manner and direction in which that intelligence surpasses that of their inferiors, would not possibly lead up to the vastly superior intelligence of man himself.

I do not see, therefore, that Professor Müller's lectures are likely to influence the opinions of any adherent of the doctrine of evolution, or that his argument is less a failure than that of Schleicher. So far, linguistic science has not been shown to have any bearing on Darwinism, either in the way of support

or of refutation; and we should, in any event, be justified in waiting for a new attempt at proof, before admitting such bearing. But I think we may go further, and claim that a true view of language shows that the two have no connection with each other. Let us see if this cannot be made clear, in a simple and unpretentious way.

Human nature is the sum of certain endowments with which man is gifted above and beyond the lower animals. Among these, linguistic science teaches us that speech in the concrete sense, as a body of signs representing ideas, was not one; just as the history of art and of machines shows that art-products and instruments were not included among them. To human nature belong only the tendencies and capacities which make both possible and necessary the development of speech. This development was a protracted historical process; it was, perhaps, a long time in taking a definite beginning; it was certainly a long time in accomplishing each successive step of progress; and the degree of advance reached has been various, in accordance with the different capacities of the several races of man, as favored or the contrary by all the influences, natural and historical, which promote or retard human progress. Precisely the same has been the case with those other parallel branches of human activity to which I have referred. But every race of men has existed long enough to have its linguistic capacities work out certain definite results; not one is found destitute of a body of signs whereby it communicates its thoughts and carries on its processes of thinking. So, also, with the invention and application of instruments; the possession of arts of design is not probably quite universal among men; that is a department of effort less interwoven with the necessities of human life. Now these historically wrought-out results, in all the three departments alike, constitute a part of the treasure of civilization of each race; they are all handed down from individual to individual, from generation to generation, often even from race to race, by a process of teaching and learning. Special and very restrictedly local, even accidental, defects may cut off individuals from sharing in the advantages of one or another of the departments of civilization; a blow that destroys the sight in childhood renders an

art education impossible; loss or lameness of members may prevent all use of instruments; a fever that dulls permanently the nerves of hearing puts spoken language out of reach, compelling the substitution of another system of aids to thought, less convenient and less elaborated. And mere isolation would have the same effect, depriving the individual of all the advantages which he enjoys as member of a (more or less) cultivated human society, and putting him back into a condition like that of the first generations of men, still possessed of normal human endowments, but deprived of the accumulated results of their exercise, — a condition, however, from which, in virtue of his endowments, he would at once begin to rise again, by the same slow progress by which he has already once risen. If, then, that whereby we excel the brutes is to be dignified by the name of "reason," who can hesitate to apply the term to the capacities rather than to their wrought-out results, to the nature rather than to the institutions?

Among the gifts and tendencies which have led man to the possession of language, one of the least essential is the possession of voice. Least essential, because there are other capacities that could have been turned to the uses of expression, and would have been so turned, with kindred result, if voice had been wanting. And voice has other and more direct uses than that of expressing intellectual conceptions. More important, as underlying all power of expression, of any kind, are our superior mental capacities of memory, of distinct conception, of abstraction, or the contemplation of the qualities of objects apart from the objects themselves, and of reflection, or the more or less conscious and deliberate review of our own mental processes. Of not less consequence (though of a highly concrete character, resolvable into a variety of elements) is the power of adapting means to ends, a power equally shown in the other characteristic departments of human activity with which I have above compared language. This requires to be added, and to be made prominent, because, though the suggestions of speech may have been in good degree instinctive, its effective beginnings were not so, nor has its substance and history been so; it has been an adaptation of means to ends. And the end primarily aimed at, the end without effort at

whose attainment no language would ever have come into being, is communication. Man does not speak in order to express his thought for his own relief or benefit, but in order to put his thought before the apprehension of his fellow-man; all the other uses of speech, lower and higher, come in the train of this; the desire to communicate is the directly impelling force to the production of speech. I will not argue this view here, as I have done so repeatedly before; it is upheld by the whole course of history of human language, and by the analogies of other parallel parts of human development. It is where speech cuts loose from its narrow and inextensible instinctive basis, and becomes, instead of a cry to relieve the speaker's own feelings, an utterance to bring a thought before another, that its unlimited growth becomes possible and that its history begins; here it makes that transition from emotional to rational upon which Müller with good reason lays so much stress.

Although, as has been pointed out above, the faculties which in man produce language are not absolutely wanting in some of the lower animals, their degree is so much inferior to ours that the absence of language anywhere below us is fully and satisfactorily accounted for. The nearest approach made among the animals to a capacity for speech is seen in the by no means contemptible power which many of them possess for understanding what we try to signify to them. Our characteristic is, as Darwin himself truly puts it, our "*large* power of connecting definite sounds with definite ideas," not a wholly exclusive power; for when Müller urges in opposition that nothing "has ever enabled one single animal to connect one single definite idea with one single definite word," I do not see how he can defend himself against the charge of a gross over-statement. The difference of degree is confessedly a very great one; a chasm, not a step, separates us from our nearest inferiors; if there have been, as the evolutionists claim, connecting links, they are lost, and thus far without trace. If they were still in existence, it might be a little embarrassing for us to determine just where our human sympathies might cease; for that sharp line upon which Müller relies with proud confidence, the possession of rational language, or of roots,

would doubtless become blurred along with the rest; there would be degrees of success in making the development out of those emotional cries and imitative sounds of which Müller himself now confesses that human speech is the result. It would be very interesting, however, to the linguist, to study the intermediate and transitional forms; many a point, which he can now solve only by conjecture, would then be cleared up by direct evidence. This advantage he will never enjoy; man is the only independently cultivable and progressive being that exists; no steps between the wholly instinctive expression of the animals and the wholly (so far as articulate words are concerned) conventional expression of man will ever be discovered. The wishes and expectations of those (for there are such) who still look to find a connecting series are founded on a misapprehension, and are futile; their fear to find that nature has made a *saltus* in passing from the one to the other is equally in vain. There is neither *saltus* nor gradual transition in the case: no transition, because the two are essentially different; no *saltus*, because human speech is an historical development out of infinitesimal beginnings, which may have been of less extent even than the instinctive speech of many a brute. If we had the missing links supplied, we should not find the more and more anthropoid beings possessing a larger and larger stock of definite articulations, to which they by instinct attached definite ideas; there are no such elements in human language, present or traceable past; and as we approach man, the detailed instincts leading to definite acts or products diminish rather than increase; we should find those beings showing more and more plainly the essentially human power of adapting means to ends, both by reflection and unconscious action, in communication and expression as in other departments of activity. We might just as reasonably worry ourselves about a *saltus* between the building powers, or the clothes-making powers, of the monkey-tribe and of ourselves. Hovel, cottage, and palace do not grow by insensible gradation out of bees' cells, or birds' nests, or beavers' huts, or any other animal structures; they began when man, a shelterless creature, with no building instincts, felt the discomforting influences of external nature, and saw how, by the appropriate use of materials lying within his reach, they could be avoided.

There is another great error of which those who argue this subject on the Darwinian side are sometimes guilty; namely, the assumption that the development of language has had a part in the evolution of humanity out of a lower form of animal life. I can discover nothing in either linguistic or physical history which at all favors such an assumption. Speech, like the other elements of our civilization, is the result of our human capacities, not their cause; it helps to raise the savage to the rank of civilized man, but not to lift him above humanity; it trains his mental powers to a higher capacity of labor, but adds no new powers; least of all does it produce modifications of physical structure that look toward the founding of new varieties or species. Man was man in *esse* and in *posse*, when the development of speech began; by its aid, though not by that alone, he has been ever ascending to a loftier plane of manhood, and is, we hope, still continuing to ascend, — though with no prospect of ever becoming angelic.

If these things are true, linguistic science has no more to say about the evolution of animal life than of vegetable life, or of geologic structure; and all future attempts like those of Schleicher and of Müller are destined to fail not less signally than theirs. The question of the Darwinian theory belongs in the hands of the biologists; if they can bring the higher animals out of the lower, they will have to be allowed to bring man himself out of the races that stand next below him in the series. And, for my part, I can see no human interests that will be endangered by their success.

It is to be observed, in conclusion, that Mr. Darwin himself shows a remarkable moderation and soundness of judgment in his treatment of the element of language. Though he refers in a foot-note (*Descent of Man*, Part I., ch. ii.) to Schleicher's pamphlet in his support, he does not deign to make the slightest use of it. Very little exception is to be taken by a linguistic scholar to any of his statements. Though no master, such as Müller is, of the facts of many languages, his general view of speech in its anthropological relations, his sense of what it is to man, and how, is far truer than that of the scholar who has attempted by the evidence of language to overthrow his whole theory.

W. D. Whitney.