# Chapter VI.

The Principles Of A Philosophical Language Further Considered.

§ 1. We have, thus far, considered only one of the requisites of a language adapted for the investigation of truth; that its terms shall each of them convey a determinate and unmistakable meaning. There are, however, as we have already remarked, other requisites; some of them important only in the second degree, but one which is fundamental, and barely yields in point of importance, if it yields at all, to the quality which we have already discussed at so much length. That the language may be fitted for its purposes, not only should every word perfectly express its meaning, but there should be no important meaning without its word. Whatever we have occasion to think of often, and for scientific purposes, ought to have a name appropriated to it.

This requisite of philosophical language may be considered under three different heads; that number of separate conditions being involved in it.

§ 2. First, there ought to be all such names, as are needful for making such a record of individual observations that the words of the record shall exactly show what fact it is which has been observed. In other words, there should be an accurate Descriptive Terminology.

The only things which we can observe directly being our own sensations, or other feelings, a complete descriptive language would be one in which there should be a name for every variety of elementary sensation or feeling. Combinations of sensations or feelings may always be described, if we have a name for each of the elementary feelings which compose them; but brevity of description, and clearness (which often depends very much on brevity), are greatly promoted by giving distinctive names not to the elements alone, but also to all combinations which are of frequent recurrence. On this occasion I can not do better than quote from Dr. Whewell(222) some of the excellent remarks which he has made on this important branch of our subject.

"The meaning of [descriptive] technical terms can be fixed in the first instance only by convention, and can be made intelligible only by presenting to the senses that which the terms are to signify. The knowledge of a color by its name can only be taught through the eye. No description can convey to a hearer what we mean by *apple-green* or *French gray*. It might, perhaps, be supposed that, in the first example, the term *apple*, referring to so familiar an object, sufficiently suggests the color intended. But it may easily be seen that this is not true; for apples are of many different hues of green, and it is only by a conventional selection that we can appropriate the term to one special shade. When this appropriation is once made, the term refers to the sensation, and not to the parts of the term; for these enter into the compound merely as a help to the memory, whether the suggestion be a natural connection as in 'apple-green,' or a casual one as in 'French gray.' In order to derive due advantage from technical terms of the kind, they must be associated *immediately* with the perception to which they belong; and not connected with it through the vague usages of common language. The memory must retain the sensation; and the technical word must be understood as directly as the most familiar word, and more distinctly. When we find such terms as *tin-white* or *pinchbeck-brown*, the metallic color so denoted ought to start up in our memory without delay or search.

"This, which it is most important to recollect with respect to the simpler properties of bodies, as color and form, is no less true with respect to more compound notions. In all cases the term is fixed to a peculiar meaning by convention; and the student, in order to use the word, must be completely familiar with the convention, so that he has no need to frame conjectures from the word itself. Such conjectures would always be insecure, and often erroneous. Thus the term *papilionaceous* applied to a flower is employed to indicate, not only a resemblance to a butterfly, but a resemblance arising from five petals of a certain-peculiar shape and arrangement; and even if the resemblance were much stronger than it is in such cases, yet, if it were produced in a different way, as, for example, by one petal, or two only, instead of a 'standard,' two 'wings,' and a 'keel' consisting of two parts more or less united into one, we should be no longer justified in speaking of it as a 'papilionaceous' flower."

When, however, the thing named is, as in this last case, a combination of simple sensations, it is not necessary, in order to learn the meaning of the word, that the student should refer back to the sensations themselves; it may be communicated to him through the medium of other words; the terms, in short, may be defined. But the names of elementary sensations, or elementary feelings of any sort, can not be defined; nor is there any mode of making their signification known but by making the learner experience the sensation, or referring him, through some known mark, to his remembrance of having experienced it before. Hence it is only the impressions on the outward senses, or those inward feelings which are connected in a very obvious and uniform manner with outward objects, that are really susceptible of an exact descriptive language. The countless variety of sensations which arise, for instance, from disease, or from peculiar physiological states, it would be in vain to attempt to name; for as no one can judge whether the sensation I have is the same with his, the name can not have, to us two, real community of meaning. The same may be said, to a considerable extent, of purely mental feelings. But in some of the sciences which are conversant with external objects, it is scarcely possible to surpass the perfection to which this quality of a philosophical language has been carried.

"The formation(223) of an exact and extensive descriptive language for botany has been executed with a degree of skill and felicity, which, before it was attained, could hardly have been dreamed of as attainable. Every part of a plant has been named; and the form of every part, even the most minute, has had a large assemblage of descriptive terms appropriated to it, by means of which the botanist can convey and receive knowledge of form and structure, as exactly as if each minute part were presented to him vastly magnified. This acquisition was part of the Linnæan reform.... 'Tournefort,' says Decandolle, 'appears to have been the first who really perceived the utility of fixing the sense of terms in such a way as always to employ the same word in the same sense, and always to express the same idea by the same words; but it was Linnæus who really created and fixed this botanical language, and this is his fairest claim to glory, for by this fixation of language he has shed clearness and precision over all parts of the science.'

"It is not necessary here to give any detailed account of the terms of botany. The fundamental ones have been gradually introduced, as the parts of plants were more carefully and minutely examined. Thus the flower was necessarily distinguished into the *calyx*, the *corolla*, the *stamens*, and the *pistils*; the sections of the corolla were termed *petals* by Columna; those of the calyx were called *sepals* by Necker. Sometimes terms of greater generality were devised; as *perianth*, to include the calyx and corolla, whether one or both of these were present; *pericarp*, for the part inclosing the grain, of whatever kind it be, fruit, nut, pod, etc. And it may easily be imagined, that descriptive terms may, by definition and combination, become very numerous and distinct. Thus leaves may be called *pinnatifid*, *pinnatipartite*, *pinnatisect*, *pinnatilobate*, *palmatifid*, *palmatipartite*, etc., and each of these words designates different combinations of the modes and extent of the divisions of the leaf with the divisions of its outline. In some cases, arbitrary numerical relations are introduced into the definition: thus, a leaf is called *bilobate*, when it is divided into two parts by a notch; but if the notch go to the middle of its length, it is *bifid*; if it go near the base of the leaf, it is *bipartite*; if to the base, it is *bisect*. Thus, too, a pod of a cruciferous plant is a *siliqua*, if it is four times as long as it is broad, but if it be shorter than this it is a *silicula*. Such terms being established, the form of the very complex leaf or frond of a fern (Hymenophyllum Wilsoni) is exactly conveyed by the following phrase: 'fronds rigid pinnate, pinnæ recurved subunilateral, pinnatifid, the segments linear undivided or bifid, spinuloso-serrate.'

"Other characters, as well as form, are conveyed with the like precision: Color by means of a classified scale of colors.... This was done with most precision by Werner, and his scale of colors is still the most usual standard of naturalists. Werner also introduced a more exact terminology with regard to other characters which are important in mineralogy, as lustre, hardness. But Mohs improved upon this step by giving a numerical scale of hardness, in which talc is 1, gypsum 2, calc spar 3, and so on.... Some properties, as specific gravity, by their definition give at once a numerical measure; and others, as crystalline form, require a very considerable array of mathematical calculation and reasoning, to point out their relations and gradations."

§ 3. Thus far of Descriptive Terminology, or of the language requisite for placing on record our observation of individual instances. But when we proceed from this to Induction, or rather to that comparison of observed

instances which is the preparatory step toward it, we stand in need of an additional and a different sort of general names.

Whenever, for purposes of Induction, we find it necessary to introduce (in Dr. Whewell's phraseology) some new general conception; that is, whenever the comparison of a set of phenomena leads to the recognition in them of some common circumstance, which, our attention not having been directed to it on any former occasion, is to us a new phenomenon; it is of importance that this new conception, or this new result of abstraction, should have a name appropriated to it; especially if the circumstance it involves be one which leads to many consequences, or which is likely to be found also in other classes of phenomena. No doubt, in most cases of the kind, the meaning might be conveyed by joining together several words already in use. But when a thing has to be often spoken of, there are more reasons than the saving of time and space, for speaking of it in the most concise manner possible. What darkness would be spread over geometrical demonstrations, if wherever the word *circle* is used, the definition of a circle were inserted instead of it. In mathematics and its applications, where the nature of the processes demands that the attention should be strongly concentrated, but does not require that it should be widely diffused, the importance of concentration also in the expressions has always been duly felt; and a mathematician no sooner finds that he shall often have occasion to speak of the same two things together, than he at once creates a term to express them whenever combined: just as, in his algebraical operations, he substitutes for (*a*m + *b*n) p/q, or for *a*/*b* + *b*/*c* + *c*/*d* + etc., the single letter P, Q, or S; not solely to shorten his symbolical expressions, but to simplify the purely intellectual part of his operations, by enabling the mind to give its exclusive attention to the relation between the quantity S and the other quantities which enter into the equation, without being distracted by thinking unnecessarily of the parts of which S is itself composed.

But there is another reason, in addition to that of promoting perspicuity, for giving a brief and compact name to each of the more considerable results of abstraction which are obtained in the course of our intellectual phenomena. By naming them, we fix our attention upon them; we keep them more constantly before the mind. The names are remembered, and being remembered, suggest their definition; while if instead of specific and characteristic names, the meaning had been expressed by putting together a number of other names, that particular combination of words already in common use for other purposes would have had nothing to make itself remembered by. If we want to render a particular combination of ideas permanent in the mind, there is nothing which clinches it like a name specially devoted to express it. If mathematicians had been obliged to speak of "that to which a quantity, in increasing or diminishing, is always approaching nearer, so that the difference becomes less than any assignable quantity, but to which it never becomes exactly equal," instead of expressing all this by the simple phrase, "the limit of a quantity," we should probably have long remained without most of the important truths which have been discovered by means of the relation between quantities of various kinds and their limits. If instead of speaking of *momentum*, it had been necessary to say, "the product of the number of units of velocity in the velocity by the number of units of mass in the mass," many of the dynamical truths now apprehended by means of this complex idea would probably have escaped notice, for want of recalling the idea itself with sufficient readiness and familiarity. And on subjects less remote from the topics of popular discussion, whoever wishes to draw attention to some new or unfamiliar distinction among things, will find no way so sure as to invent or select suitable names for the express purpose of marking it.

A volume devoted to explaining what the writer means by civilization, does not raise so vivid a conception of it as the single expression, that Civilization is a different thing from Cultivation; the compactness of that brief designation for the contrasted quality being an equivalent for a long discussion. So, if we would impress forcibly upon the understanding and memory the distinction between the two different conceptions of a representative government, we can not more effectually do so than by saying that Delegation is not Representation. Hardly any original thoughts on mental or social subjects ever make their way among mankind, or assume their proper importance in the minds even of their inventors, until aptly-selected words or phrases have, as it were, nailed them down and held them fast.

§ 4. Of the three essential parts of a philosophical language, we have now mentioned two: a terminology suited for describing with precision the individual facts observed; and a name for every common property of any importance or interest, which we detect by comparing those facts; including (as the concretes corresponding to those abstract terms) names for the classes which we artificially construct in virtue of those properties, or as many of them, at least, as we have frequent occasion to predicate any thing of.

But there is a sort of classes, for the recognition of which no such elaborate process is necessary; because each of them is marked out from all others not by some one property, the detection of which may depend on a difficult act of abstraction, but by its properties generally. I mean, the Kinds of things, in the sense which, in this treatise, has been specially attached to that term. By a Kind, it will be remembered, we mean one of those classes which are distinguished from all others not by one or a few definite properties, but by an unknown multitude of them; the combination of properties on which the class is grounded, being a mere index to an indefinite number of other distinctive attributes. The class horse is a Kind, because the things which agree in possessing the characters by which we recognize a horse, agree in a great number of other properties, as we know, and, it can not be doubted, in many more than we know. Animal, again, is a Kind, because no definition that could be given of the name animal could either exhaust the properties common to all animals, or supply premises from which the remainder of those properties could be inferred. But a combination of properties which does not give evidence of the existence of any other independent peculiarities, does not constitute a Kind. White horse, therefore, is not a Kind; because horses which agree in whiteness, do not agree in any thing else, except the qualities common to all horses, and whatever may be the causes or effects of that particular color.

On the principle that there should be a name for every thing which we have frequent occasion to make assertions about, there ought evidently to be a name for every Kind; for as it is the very meaning of a Kind that the individuals composing it have an indefinite multitude of properties in common, it follows that, if not with our present knowledge, yet with that which we may hereafter acquire, the Kind is a subject to which there will have to be applied many predicates. The third component element of a philosophical language, therefore, is that there shall be a name for every Kind. In other words, there must not only be a terminology, but also a nomenclature.

The words Nomenclature and Terminology are employed by most authors almost indiscriminately; Dr. Whewell being, as far as I am aware, the first writer who has regularly assigned to the two words different meanings. The distinction, however, which he has drawn between them being real and important, his example is likely to be followed; and (as is apt to be the case when such innovations in language are felicitously made) a vague sense of the distinction is found to have influenced the employment of the terms in common practice, before the expediency had been pointed out of discriminating them philosophically. Every one would say that the reform effected by Lavoisier and Guyton-Morveau in the language of chemistry consisted in the introduction of a new nomenclature, not of a new terminology. Linear, lanceolate, oval, or oblong, serrated, dentate, or crenate leaves, are expressions forming part of the terminology of botany, while the names "Viola odorata," and "Ulex Europæus," belong to its nomenclature.

A nomenclature may be defined, the collection of the names of all the Kinds with which any branch of knowledge is conversant; or more properly, of all the lowest Kinds, or *infirmæ species*--those which may be subdivided indeed, but not into Kinds, and which generally accord with what in natural history are termed simply species. Science possesses two splendid examples of a systematic nomenclature; that of plants and animals, constructed by Linnæus and his successors, and that of chemistry, which we owe to the illustrious group of chemists who flourished in France toward the close of the eighteenth century. In these two departments, not only has every known species, or lowest Kind, a name assigned to it, but when new lowest Kinds are discovered, names are at once given to them on a uniform principle. In other sciences the nomenclature is not at present constructed on any system, either because the species to be named are not numerous enough to require one (as in geometry, for example), or because no one has yet suggested a suitable principle for such a system, as in mineralogy; in which the want of a scientifically constructed nomenclature is

now the principal cause which retards the progress of the science.

§ 5. A word which carries on its face that it belongs to a nomenclature, seems at first sight to differ from other concrete general names in this--that its meaning does not reside in its connotation, in the attributes implied in it, but in its denotation, that is, in the particular group of things which it is appointed to designate; and can not, therefore, be unfolded by means of a definition, but must be made known in another way. This opinion, however, appears to me erroneous. Words belonging to a nomenclature differ, I conceive, from other words mainly in this, that besides the ordinary connotation, they have a peculiar one of their own: besides connoting certain attributes, they also connote that those attributes are distinctive of a Kind. The term "peroxide of iron," for example, belonging by its form to the systematic nomenclature of chemistry, bears on its face that it is the name of a peculiar Kind of substance. It moreover connotes, like the name of any other class, some portion of the properties common to the class; in this instance the property of being a compound of iron and the largest dose of oxygen with which iron will combine. These two things, the fact of being such a compound, and the fact of being a Kind, constitute the connotation of the name peroxide of iron. When we say of the substance before us, that it is the peroxide of iron, we thereby assert, first, that it is a compound of iron and a maximum of oxygen, and next, that the substance so composed is a peculiar Kind of substance.

Now, this second part of the connotation of any word belonging to a nomenclature is as essential a portion of its meaning as the first part, while the definition only declares the first; and hence the appearance that the signification of such terms can not be conveyed by a definition: which appearance, however, is fallacious. The name Viola odorata denotes a Kind, of which a certain number of characters, sufficient to distinguish it, are enunciated in botanical works. This enumeration of characters is surely, as in other cases, a definition of the name. No, say some, it is not a definition, for the name Viola odorata does not mean those characters; it means that particular group of plants, and the characters are selected from among a much greater number, merely as marks by which to recognize the group. But to this I reply, that the name does not mean that group, for it would be applied to that group no longer than while the group is believed to be an *infima species*; if it were to be discovered that several distinct Kinds have been confounded under this one name, no one would any longer apply the name Viola odorata to the whole of the group, but would apply it, if retained at all, to one only of the Kinds retained therein. What is imperative, therefore, is not that the name shall denote one particular collection of objects, but that it shall denote a Kind, and a lowest Kind. The form of the name declares that, happen what will, it is to denote an *infima species*; and that, therefore, the properties which it connotes, and which are expressed in the definition, are to be connoted by it no longer than while we continue to believe that those properties, when found together, indicate a Kind, and that the whole of them are found in no more than one Kind.

With the addition of this peculiar connotation, implied in the form of every word which belongs to a systematic nomenclature; the set of characters which is employed to discriminate each Kind from all other Kinds (and which is a real definition) constitutes as completely as in any other case the whole meaning of the term. It is no objection to say that (as is often the case in natural history) the set of characters may be changed, and another substituted as being better suited for the purpose of distinction, while the word, still continuing to denote the same group or things, is not considered to have changed its meaning. For this is no more than may happen in the case of any other general name: we may, in reforming its connotation, leave its denotation untouched; and it is generally desirable to do so. The connotation, however, is not the less for this the real meaning, for we at once apply the name wherever the characters set down in the definition are found; and that which exclusively guides us in applying the term, must constitute its signification. If we find, contrary to our previous belief, that the characters are not peculiar to one species, we cease to use the term co-extensively with the characters; but then it is because the other portion of the connotation fails; the condition that the class must be a Kind. The connotation, therefore, is still the meaning; the set of descriptive characters is a true definition; and the meaning is unfolded, not indeed (as in other cases) by the definition alone, but by the definition and the form of the word taken together.

§ 6. We have now analyzed what is implied in the two principal requisites of a philosophical language; first,

precision, or definiteness; and, secondly, completeness. Any further remarks on the mode of constructing a nomenclature must be deferred until we treat of Classification; the mode of naming the Kinds of things being necessarily subordinate to the mode of arranging those Kinds into larger classes. With respect to the minor requisites of terminology, some of them are well stated and illustrated in the "Aphorisms concerning the Language of Science," included in Dr. Whewell's *Philosophy of the Inductive Sciences*. These, as being of secondary importance in the peculiar point of view of Logic, I shall not further refer to, but shall confine my observations to one more quality, which, next to the two already treated of, appears to be the most valuable which the language of science can possess. Of this quality a general notion may be conveyed by the following aphorism:

Whenever the nature of the subject permits our reasoning processes to be, without danger, carried on mechanically, the language should be constructed on as mechanical principles as possible; while, in the contrary case, it should be so constructed that there shall be the greatest possible obstacles to a merely mechanical use of it.

I am aware that this maxim requires much explanation, which I shall at once proceed to give. At first, as to what is meant by using a language mechanically. The complete or extreme case of the mechanical use of language, is when it is used without any consciousness of a meaning, and with only the consciousness of using certain visible or audible marks in conformity to technical rules previously laid down. This extreme case is nowhere realized except in the figures of arithmetic, and still more the symbols of algebra, a language unique in its kind, and approaching as nearly to perfection, for the purposes to which it is destined, as can, perhaps, be said of any creation of the human mind. Its perfection consists in the completeness of its adaptation to a purely mechanical use. The symbols are mere counters, without even the semblance of a meaning apart from the convention which is renewed each time they are employed, and which is altered at each renewal, the same symbol *a* or *x* being used on different occasions to represent things which (except that, like all things, they are susceptible of being numbered) have no property in common. There is nothing, therefore, to distract the mind from the set of mechanical operations which are to be performed upon the symbols, such as squaring both sides of the equation, multiplying or dividing them by the same or by equivalent symbols, and so forth. Each of these operations, it is true, corresponds to a syllogism; represents one step of a ratiocination relating not to the symbols, but to the things signified by them. But as it has been found practicable to frame a technical form, by conforming to which we can make sure of finding the conclusion of the ratiocination, our end can be completely attained without our ever thinking of any thing but the symbols. Being thus intended to work merely as mechanism, they have the qualities which mechanism ought to have. They are of the least possible bulk, so that they take up scarcely any room, and waste no time in their manipulation; they are compact, and fit so closely together that the eye can take in the whole at once of almost every operation which they are employed to perform.

These admirable properties of the symbolical language of mathematics have made so strong an impression on the minds of many thinkers, as to have led them to consider the symbolical language in question as the ideal type of philosophical language generally; to think that names in general, or (as they are fond of calling them) signs, are fitted for the purposes of thought in proportion as they can be made to approximate to the compactness, the entire unmeaningness, and the capability of being used as counters without a thought of what they represent, which are characteristic of the *a* and *b*, the *x* and *y*, of algebra. This notion has led to sanguine views of the acceleration of the progress of science by means which, I conceive, can not possibly conduce to that end, and forms part of that exaggerated estimate of the influence of signs, which has contributed in no small degree to prevent the real laws of our intellectual operations from being rightly understood.

In the first place, a set of signs by which we reason without consciousness of their meaning, can be serviceable, at most, only in our deductive operations. In our direct inductions we can not for a moment dispense with a distinct mental image of the phenomena, since the whole operation turns on a perception of the particulars in which those phenomena agree and differ. But, further, this reasoning by counters is only

suitable to a very limited portion even of our deductive processes. In our reasonings respecting numbers, the only general principles which we ever have occasion to introduce are these, Things which are equal to the same thing are equal to one another, and The sums or differences of equal things are equal; with their various corollaries. Not only can no hesitation ever arise respecting the applicability of these principles, since they are true of all magnitudes whatever; but every possible application of which they are susceptible, may be reduced to a technical rule; and such, in fact, the rules of the calculus are. But if the symbols represent any other things than mere numbers, let us say even straight or curve lines, we have then to apply theorems of geometry not true of all lines without exception, and to select those which are true of the lines we are reasoning about. And how can we do this unless we keep completely in mind what particular lines these are? Since additional geometrical truths may be introduced into the ratiocination in any stage of its progress, we can not suffer ourselves, during even the smallest part of it, to use the names mechanically (as we use algebraical symbols) without an image annexed to them. It is only after ascertaining that the solution of a question concerning lines can be made to depend on a previous question concerning numbers, or, in other words, after the question has been (to speak technically) reduced to an equation, that the unmeaning signs become available, and that the nature of the facts themselves to which the investigation relates can be dismissed from the mind. Up to the establishment of the equation, the language in which mathematicians carry on their reasoning does not differ in character from that employed by close reasoners on any other kind of subject.

I do not deny that every correct ratiocination, when thrown into the syllogistic shape, is conclusive from the mere form of the expression, provided none of the terms used be ambiguous; and this is one of the circumstances which have led some writers to think that if all names were so judiciously constructed and so carefully defined as not to admit of any ambiguity, the improvement thus made in language would not only give to the conclusions of every deductive science the same certainty with those of mathematics, but would reduce all reasonings to the application of a technical form, and enable their conclusiveness to be rationally assented to after a merely mechanical process, as is undoubtedly the case in algebra. But, if we except geometry, the conclusions of which are already as certain and exact as they can be made, there is no science but that of number, in which the practical validity of a reasoning can be apparent to any person who has looked only at the reasoning itself. Whoever has assented to what was said in the last Book concerning the case of the Composition of Causes, and the still stronger case of the entire supersession of one set of laws by another, is aware that geometry and algebra are the only sciences of which the propositions are categorically true; the general propositions of all other sciences are true only hypothetically, supposing that no counteracting cause happens to interfere. A conclusion, therefore, however correctly deduced, in point of form, from admitted laws of nature, will have no other than an hypothetical certainty. At every step we must assure ourselves that no other law of nature has superseded, or intermingled its operation with, those which are the premises of the reasoning; and how can this be done by merely looking at the words? We must not only be constantly thinking of the phenomena themselves, but we must be constantly studying them; making ourselves acquainted with the peculiarities of every case to which we attempt to apply our general principles.

The algebraic notation, considered as a philosophical language, is perfect in its adaptation to the subjects for which it is commonly employed, namely those of which the investigations have already been reduced to the ascertainment of a relation between numbers. But, admirable as it is for its own purpose, the properties by which it is rendered such are so far from constituting it the ideal model of philosophical language in general, that the more nearly the language of any other branch of science approaches to it, the less fit that language is for its own proper functions. On all other subjects, instead of contrivances to prevent our attention from being distracted by thinking of the meaning of our signs, we ought to wish for contrivances to make it impossible that we should ever lose sight of that meaning even for an instant.

With this view, as much meaning as possible should be thrown into the formation of the word itself; the aids of derivation and analogy being made available to keep alive a consciousness of all that is signified by it. In this respect those languages have an immense advantage which form their compounds and derivatives from native roots, like the German, and not from those of a foreign or dead language, as is so much the case with English, French, and Italian; and the best are those which form them according to fixed analogies,

corresponding to the relations between the ideas to be expressed. All languages do this more or less, but especially, among modern European languages, the German; while even that is inferior to the Greek, in which the relation between the meaning of a derivative word and that of its primitive is in general clearly marked by its mode of formation, except in the case of words compounded with prepositions, which are often, in both those languages, extremely anomalous.

But all that can be done, by the mode of constructing words, to prevent them from degenerating into sounds passing through the mind without any distinct apprehension of what they signify, is far too little for the necessity of the case. Words, however well constructed originally, are always tending, like coins, to have their inscription worn off by passing from hand to hand; and the only possible mode of reviving it is to be ever stamping it afresh, by living in the habitual contemplation of the phenomena themselves, and not resting in our familiarity with the words that express them. If any one, having possessed himself of the laws of phenomena as recorded in words, whether delivered to him originally by others, or even found out by himself, is content from thenceforth to live among these formulæ, to think exclusively of them, and of applying them to cases as they arise, without keeping up his acquaintance with the realities from which these laws were collected--not only will he continually fail in his practical efforts, because he will apply his formulæ without duly considering whether, in this case and in that, other laws of nature do not modify or supersede them; but the formulæ themselves will progressively lose their meaning to him, and he will cease at last even to be capable of recognizing with certainty whether a case falls within the contemplation of his formula or not. It is, in short, as necessary, on all subjects not mathematical, that the things on which we reason should be conceived by us in the concrete, and "clothed in circumstances," as it is in algebra that we should keep all individualizing peculiarities sedulously out of view.

With this remark we close our observations on the Philosophy of Language.