Chapter VIII.

Of Definition.

§ 1. One necessary part of the theory of Names and of Propositions remains to be treated of in this place: the theory of Definitions. As being the most important of the class of propositions which we have characterized as purely verbal, they have already received some notice in the chapter preceding the last. But their fuller treatment was at that time postponed, because definition is so closely connected with classification, that, until the nature of the latter process is in some measure understood, the former can not be discussed to much purpose.

The simplest and most correct notion of a Definition is, a proposition declaratory of the meaning of a word; namely, either the meaning which it bears in common acceptation, or that which the speaker or writer, for the particular purposes of his discourse, intends to annex to it.

The definition of a word being the proposition which enunciates its meaning, words which have no meaning are unsusceptible of definition. Proper names, therefore, can not be defined. A proper name being a mere mark put upon an individual, and of which it is the characteristic property to be destitute of meaning, its meaning can not of course be declared; though we may indicate by language, as we might indicate still more conveniently by pointing with the finger, upon what individual that particular mark has been, or is intended to be, put. It is no definition of "John Thomson" to say he is "the son of General Thomson;" for the name John Thomson does not express this. Neither is it any definition of "John Thomson" to say he is "the man now crossing the street." These propositions may serve to make known who is the particular man to whom the name belongs, but that may be done still more unambiguously by pointing to him, which, however, has not been esteemed one of the modes of definition.

In the case of connotative names, the meaning, as has been so often observed, is the connotation; and the definition of a connotative name, is the proposition which declares its connotation. This might be done either directly or indirectly. The direct mode would be by a proposition in this form: "Man" (or whatsoever the word may be) "is a name connoting such and such attributes," or "is a name which, when predicated of any thing, signifies the possession of such and such attributes by that thing." Or thus: Man is every thing which possesses such and such attributes: Man is every thing which possesses corporeity, organization, life, rationality, and certain peculiarities of external form.

This form of definition is the most precise and least equivocal of any; but it is not brief enough, and is besides too technical for common discourse. The more usual mode of declaring the connotation of a name, is to predicate of it another name or names of known signification, which connote the same aggregation of attributes. This may be done either by predicating of the name intended to be defined, another connotative name exactly synonymous, as, "Man is a human being," which is not commonly accounted a definition at all; or by predicating two or more connotative names, which make up among them the whole connotation of the name to be defined. In this last case, again, we may either compose our definition of as many connotative names as there are attributes, each attribute being connoted by one, as, Man is a corporeal, organized, animated, rational being, shaped so and so; or we employ names which connote several of the attributes at once, as, Man is a rational *animal*, shaped so and so.

The definition of a name, according to this view of it, is the sum total of all the *essential* propositions which can be framed with that name for their subject. All propositions the truth of which is implied in the name, all those which we are made aware of by merely hearing the name, are included in the definition, if complete, and may be evolved from it without the aid of any other premises; whether the definition expresses them in two or three words, or in a larger number. It is, therefore, not without reason that Condillac and other writers have affirmed a definition to be an *analysis*. To resolve any complex whole into the elements of which it is compounded, is the meaning of analysis: and this we do when we replace one word which connotes a set of

attributes collectively, by two or more which connote the same attributes singly, or in smaller groups.

§ 2. From this, however, the question naturally arises, in what manner are we to define a name which connotes only a single attribute: for instance, "white," which connotes nothing but whiteness; "rational," which connotes nothing but the possession of reason. It might seem that the meaning of such names could only be declared in two ways; by a synonymous term, if any such can be found; or in the direct way already alluded to: "White is a name connoting the attribute whiteness." Let us see, however, whether the analysis of the meaning of the name, that is, the breaking down of that meaning into several parts, admits of being carried farther. Without at present deciding this question as to the word *white*, it is obvious that in the case of *rational* some further explanation may be given of its meaning than is contained in the proposition, "Rational is that which possesses the attribute of reason;" since the attribute reason itself admits of being defined. And here we must turn our attention to the definitions of attributes, or rather of the names of attributes, that is, of abstract names.

In regard to such names of attributes as are connotative, and express attributes of those attributes, there is no difficulty: like other connotative names, they are defined by declaring their connotation. Thus the word *fault* may be defined, "a quality productive of evil or inconvenience." Sometimes, again, the attribute to be defined is not one attribute, but a union of several: we have only, therefore, to put together the names of all the attributes taken separately, and we obtain the definition of the name which belongs to them all taken together; a definition which will correspond exactly to that of the corresponding concrete name. For, as we define a concrete name by enumerating the attributes which it connotes, and as the attributes connoted by a concrete name form the entire signification of the corresponding abstract name, the same enumeration will serve for the definition of both. Thus, if the definition of a *human being* be this, "a being, corporeal, animated, rational, shaped so and so," the definition of *humanity* will be corporeity and animal life, combined with rationality, and with such and such a shape.

When, on the other hand, the abstract name does not express a complication of attributes, but a single attribute, we must remember that every attribute is grounded on some fact or phenomenon, from which, and which alone, it derives its meaning. To that fact or phenomenon, called in a former chapter the foundation of the attribute, we must, therefore, have recourse for its definition. Now, the foundation of the attribute may be a phenomenon of any degree of complexity, consisting of many different parts, either co-existent or in succession. To obtain a definition of the attribute, we must analyze the phenomenon into these parts. Eloquence, for example, is the name of one attribute only; but this attribute is grounded on external effects of a complicated nature, flowing from acts of the person to whom we ascribe the attribute; and by resolving this phenomenon of causation into its two parts, the cause and the effect, we obtain a definition of eloquence, viz. the power of influencing the feelings by speech or writing.

A name, therefore, whether concrete or abstract, admits of definition, provided we are able to analyze, that is, to distinguish into parts, the attribute or set of attributes which constitute the meaning both of the concrete name and of the corresponding abstract: if a set of attributes, by enumerating them; if a single attribute, by dissecting the fact or phenomenon (whether of perception or of internal consciousness) which is the foundation of the attribute. But, further, even when the fact is one of our simple feelings or states of consciousness, and therefore unsusceptible of analysis, the names both of the object and of the attribute still admit of definition; or rather, would do so if all our simple feelings had names. Whiteness may be defined, the property or power of exciting the sensation of white. A white object may be defined, an object which excites the sensation of white. The only names which are unsusceptible of definition, because their meaning is unsusceptible of analysis, are the names of the simple feelings themselves. These are in the same condition as proper names. They are not indeed, like proper names, unmeaning; for the words *sensation of white* signify, that the sensation which I so denominate resembles other sensations which I remember to have had before, and to have called by that name. But as we have no words by which to recall those former sensations, except the very word which we seek to define, or some other which, being exactly synonymous with it, requires definition as much, words can not unfold the signification of this class of names; and we are obliged to make a

direct appeal to the personal experience of the individual whom we address.

§ 3. Having stated what seems to be the true idea of a Definition, I proceed to examine some opinions of philosophers, and some popular conceptions on the subject, which conflict more or less with that idea.

The only adequate definition of a name is, as already remarked, one which declares the facts, and the whole of the facts, which the name involves in its signification. But with most persons the object of a definition does not embrace so much; they look for nothing more, in a definition, than a guide to the correct use of the term--a protection against applying it in a manner inconsistent with custom and convention. Any thing, therefore, is to them a sufficient definition of a term, which will serve as a correct index to what the term *de*notes; though not embracing the whole, and sometimes, perhaps, not even any part, of what it connotes. This gives rise to two sorts of imperfect, or unscientific definition; Essential but incomplete Definitions, and Accidental Definitions, or Descriptions. In the former, a connotative name is defined by a part only of its connotation; in the latter, by something which forms no part of the connotation at all.

An example of the first kind of imperfect definitions is the following: Man is a rational animal. It is impossible to consider this as a complete definition of the word Man, since (as before remarked) if we adhered to it we should be obliged to call the Houyhnhnms men; but as there happen to be no Houyhnhnms, this imperfect definition is sufficient to mark out and distinguish from all other things, the objects at present denoted by "man;" all the beings actually known to exist, of whom the name is predicable. Though the word is defined by some only among the attributes which it connotes, not by all, it happens that all known objects which possess the enumerated attributes, possess also those which are omitted; so that the field of predication which the word covers, and the employment of it which is conformable to usage, are as well indicated by the inadequate definition as by an adequate one. Such definitions, however, are always liable to be overthrown by the discovery of new objects in nature.

Definitions of this kind are what logicians have had in view, when they laid down the rule, that the definition of a species should be *per genus et differentiam*. Differentia being seldom taken to mean the whole of the peculiarities constitutive of the species, but some one of those peculiarities only, a complete definition would be *per genus et differentias*, rather than *differentiam*. It would include, with the name of the superior genus, not merely *some* attribute which distinguishes the species intended to be defined from all other species of the same genus, but *all* the attributes implied in the name of the species, which the name of the superior genus has not already implied. The assertion, however, that a definition must of necessity consist of a genus and differentiæ, is not tenable. It was early remarked by logicians, that the *summum genus* in any classification, having no genus superior to itself, could not be defined in this manner. Yet we have seen that all names, except those of our elementary feelings, are susceptible of definition in the strictest sense; by setting forth in words the constituent parts of the fact or phenomenon, of which the connotation of every word is ultimately composed.

§ 4. Although the first kind of imperfect definition (which defines a connotative term by a part only of what it connotes, but a part sufficient to mark out correctly the boundaries of its denotation), has been considered by the ancients, and by logicians in general, as a complete definition; it has always been deemed necessary that the attributes employed should really form part of the connotation; for the rule was that the definition must be drawn from the *essence* of the class; and this would not have been the case if it had been in any degree made up of attributes not connoted by the name. The second kind of imperfect definition, therefore, in which the name of a class is defined by any of its accidents--that is, by attributes which are not included in its connotation--has been rejected from the rank of genuine Definition by all logicians, and has been termed Description.

This kind of imperfect definition, however, takes its rise from the same cause as the other, namely, the willingness to accept as a definition any thing which, whether it expounds the meaning of the name or not, enables us to discriminate the things denoted by the name from all other things, and consequently to employ

the term in predication without deviating from established usage. This purpose is duly answered by stating any (no matter what) of the attributes which are common to the whole of the class, and peculiar to it; or any combination of attributes which happens to be peculiar to it, though separately each of those attributes may be common to it with some other things. It is only necessary that the definition (or description) thus formed, should be *convertible* with the name which it professes to define; that is, should be exactly co-extensive with it, being predicable of every thing of which it is predicable, and of nothing of which it is not predicable; though the attributes specified may have no connection with those which mankind had in view when they formed or recognized the class, and gave it a name. The following are correct definitions of Man, according to this test: Man is a mammiferous animal, having (by nature) two hands (for the human species answers to this description, and no other animal does): Man is an animal who cooks his food: Man is a featherless biped.

What would otherwise be a mere description, may be raised to the rank of a real definition by the peculiar purpose which the speaker or writer has in view. As was seen in the preceding chapter, it may, for the ends of a particular art or science, or for the more convenient statement of an author's particular doctrines, be advisable to give to some general name, without altering its denotation, a special connotation, different from its ordinary one. When this is done, a definition of the name by means of the attributes which make up the special connotation, though in general a mere accidental definition or description, becomes on the particular occasion and for the particular purpose a complete and genuine definition. This actually occurs with respect to one of the preceding examples, "Man is a mammiferous animal having two hands," which is the scientific definition of man, considered as one of the species in Cuvier's distribution of the animal kingdom.

In cases of this sort, though the definition is still a declaration of the meaning which in the particular instance the name is appointed to convey, it can not be said that to state the meaning of the word is the purpose of the definition. The purpose is not to expound a name, but a classification. The special meaning which Cuvier assigned to the word Man (quite foreign to its ordinary meaning, though involving no change in the denotation of the word), was incidental to a plan of arranging animals into classes on a certain principle, that is, according to a certain set of distinctions. And since the definition of Man according to the ordinary connotation of the word, though it would have answered every other purpose of a definition, would not have pointed out the place which the species ought to occupy in that particular classification; he gave the word a special connotation, that he might be able to define it by the kind of attributes on which, for reasons of scientific convenience, he had resolved to found his division of animated nature.

Scientific definitions, whether they are definitions of scientific terms, or of common terms used in a scientific sense, are almost always of the kind last spoken of: their main purpose is to serve as the landmarks of scientific classification. And since the classifications in any science are continually modified as scientific knowledge advances, the definitions in the sciences are also constantly varying. A striking instance is afforded by the words Acid and Alkali, especially the former. As experimental discovery advanced, the substances classed with acids have been constantly multiplying, and by a natural consequence the attributes connoted by the word have receded and become fewer. At first it connoted the attributes, of combining with an alkali to form a neutral substance (called a salt); being compounded of a base and oxygen; causticity to the taste and touch; fluidity, etc. The true analysis of muriatic acid, into chlorine and hydrogen, caused the second property, composition from a base and oxygen, to be excluded from the connotation. The same discovery fixed the attention of chemists upon hydrogen as an important element in acids; and more recent discoveries having led to the recognition of its presence in sulphuric, nitric, and many other acids, where its existence was not previously suspected, there is now a tendency to include the presence of this element in the connotation of the word. But carbonic acid, silica, sulphurous acid, have no hydrogen in their composition; that property can not, therefore, be connoted by the term, unless those substances are no longer to be considered acids. Causticity and fluidity have long since been excluded from the characteristics of the class, by the inclusion of silica and many other substances in it; and the formation of neutral bodies by combination with alkalis, together with such electro-chemical peculiarities as this is supposed to imply, are now the only *differentiæ* which form the fixed connotation of the word Acid, as a term of chemical science.

What is true of the definition of any term of science, is of course true of the definition of a science itself; and accordingly (as observed in the Introductory Chapter of this work), the definition of a science must necessarily be progressive and provisional. Any extension of knowledge or alteration in the current opinions respecting the subject-matter, may lead to a change more or less extensive in the particulars included in the science; and its composition being thus altered, it may easily happen that a different set of characteristics will be found better adapted as differentiæ for defining its name.

In the same manner in which a special or technical definition has for its object to expound the artificial classification out of which it grows; the Aristotelian logicians seem to have imagined that it was also the business of ordinary definition to expound the ordinary, and what they deemed the natural, classification of things, namely, the division of them into Kinds; and to show the place which each Kind occupies, as superior, collateral, or subordinate, among other Kinds. This notion would account for the rule that all definition must necessarily be *per genus et differentiam*, and would also explain why a single differentia was deemed sufficient. But to expound, or express in words, a distinction of Kind, has already been shown to be an impossibility: the very meaning of a Kind is, that the properties which distinguish it do not grow out of one another, and can not therefore be set forth in words, even by implication, otherwise than by enumerating them all: and all are not known, nor are ever likely to be so. It is idle, therefore, to look to this as one of the purposes of a definition: while, if it be only required that the definition of a Kind should indicate what kinds include it or are included by it, any definitions which expound the connotation of the names will do this: for the name of each class must necessarily connote enough of its properties to fix the boundaries of the class. If the definition, therefore, be a full statement of the connotation, it is all that a definition can be required to be.(43)

§ 5. Of the two incomplete and popular modes of definition, and in what they differ from the complete or philosophical mode, enough has now been said. We shall next examine an ancient doctrine, once generally prevalent and still by no means exploded, which I regard as the source of a great part of the obscurity hanging over some of the most important processes of the understanding in the pursuit of truth. According to this, the definitions of which we have now treated are only one of two sorts into which definitions may be divided, viz., definitions of names, and definitions of things. The former are intended to explain the meaning of a term; the latter, the nature of a thing; the last being incomparably the most important.

This opinion was held by the ancient philosophers, and by their followers, with the exception of the Nominalists; but as the spirit of modern metaphysics, until a recent period, has been on the whole a Nominalist spirit, the notion of definitions of things has been to a certain extent in abeyance, still continuing, however, to breed confusion in logic, by its consequences indeed rather than by itself. Yet the doctrine in its own proper form now and then breaks out, and has appeared (among other places) where it was scarcely to be expected, in a justly admired word, Archbishop Whately's *Logic*.(44) In a review of that work published by me in the *Westminster Review* for January, 1828, and containing some opinions which I no longer entertain, I find the following observations on the question now before us; observations with which my present view of that question is still sufficiently in accordance.

"The distinction between nominal and real definitions, between definitions of words and what are called definitions of things, though conformable to the ideas of most of the Aristotelian logicians, can not, as it appears to us, be maintained. We apprehend that no definition is ever intended to 'explain and unfold the nature of a thing.' It is some confirmation of our opinion, that none of those writers who have thought that there were definitions of things, have ever succeeded in discovering any criterion by which the definition of a thing can be distinguished from any other proposition relating to the thing. The definition, they say, unfolds the nature of the thing: but no definition can unfold its whole nature; and every proposition in which any quality whatever is predicated of the thing, unfolds some part of its nature. The true state of the case we take to be this. All definitions are of names, and of names only; but, in some definitions, it is clearly apparent, that nothing is intended except to explain the meaning of the word; while in others, besides explaining the meaning of the word, it is intended to be implied that there exists a thing, corresponding to the word. Whether

this be or be not implied in any given case, can not be collected from the mere form of the expression. 'A centaur is an animal with the upper parts of a man and the lower parts of a horse,' and 'A triangle is a rectilineal figure with three sides,' are, in form, expressions precisely similar; although in the former it is not implied that any *thing*, conformable to the term, really exists, while in the latter it is; as may be seen by substituting in both definitions, the word *means* for *is*. In the first expression, 'A centaur means an animal,' etc., the sense would remain unchanged: in the second, 'A triangle means,' etc., the meaning would be altered, since it would be obviously impossible to deduce any of the truths of geometry from a proposition expressive only of the manner in which we intend to employ a particular sign.

"There are, therefore, expressions, commonly passing for definitions, which include in themselves more than the mere explanation of the meaning of a term. But it is not correct to call an expression of this sort a peculiar kind of definition. Its difference from the other kind consists in this, that it is not a definition, but a definition and something more. The definition above given of a triangle, obviously comprises not one, but two propositions, perfectly distinguishable. The one is, 'There may exist a figure, bounded by three straight lines;' the other, 'And this figure may be termed a triangle.' The former of these propositions is not a definition at all: the latter is a mere nominal definition, or explanation of the use and application of a term. The first is susceptible of truth or falsehood, and may therefore be made the foundation of a train of reasoning. The latter can neither be true nor false; the only character it is susceptible of is that of conformity or disconformity to the ordinary usage of language."

There is a real distinction, then, between definitions of names, and what are erroneously called definitions of things; but it is, that the latter, along with the meaning of a name, covertly asserts a matter of fact. This covert assertion is not a definition, but a postulate. The definition is a mere identical proposition, which gives information only about the use of language, and from which no conclusions affecting matters of fact can possibly be drawn. The accompanying postulate, on the other hand, affirms a fact, which may lead to consequences of every degree of importance. It affirms the actual or possible existence of Things possessing the combination of attributes set forth in the definition; and this, if true, may be foundation sufficient on which to build a whole fabric of scientific truth.

We have already made, and shall often have to repeat, the remark, that the philosophers who overthrew Realism by no means got rid of the consequences of Realism, but retained long afterward, in their own philosophy, numerous propositions which could only have a rational meaning as part of a Realistic system. It had been handed down from Aristotle, and probably from earlier times, as an obvious truth, that the science of Geometry is deduced from definitions. This, so long as a definition was considered to be a proposition "unfolding the nature of the thing," did well enough. But Hobbes followed, and rejected utterly the notion that a definition declares the nature of the thing, or does any thing but state the meaning of a name; yet he continued to affirm as broadly as any of his predecessors, that the {~GREEK SMALL LETTER ALPHA WITH PSILI~}{~GREEK SMALL LETTER RHO~}{~GREEK SMALL LETTER CHI~}{~GREEK SMALL LETTER ALPHA~}{~GREEK SMALL LETTER IOTA WITH VARIA~}, *principia*, or original premises of mathematics, and even of all science, are definitions; producing the singular paradox, that systems of scientific truth, nay, all truths whatever at which we arrive by reasoning, are deduced from the arbitrary conventions of mankind concerning the signification of words.

To save the credit of the doctrine that definitions are the premises of scientific knowledge, the proviso is sometimes added, that they are so only under a certain condition, namely, that they be framed conformably to the phenomena of nature; that is, that they ascribe such meanings to terms as shall suit objects actually existing. But this is only an instance of the attempt so often made, to escape from the necessity of abandoning old language after the ideas which it expresses have been exchanged for contrary ones. From the meaning of a name (we are told) it is possible to infer physical facts, provided the name has corresponding to it an existing thing. But if this proviso be necessary, from which of the two is the inference really drawn? From the existence of a thing having the properties, or from the existence of a name meaning them?

Take, for instance, any of the definitions laid down as premises in Euclid's Elements; the definition, let us say, of a circle. This, being analyzed, consists of two propositions; the one an assumption with respect to a matter of fact, the other a genuine definition. "A figure may exist, having all the points in the line which bounds it equally distant from a single point within it:" "Any figure possessing this property is called a circle." Let us look at one of the demonstrations which are said to depend on this definition, and observe to which of the two propositions contained in it the demonstration really appeals. "About the centre A, describe the circle B C D."

Here is an assumption that a figure, such as the definition expresses, *may* be described; which is no other than the postulate, or covert assumption, involved in the so-called definition. But whether that figure be called a circle or not is quite immaterial. The purpose would be as well answered, in all respects except brevity, were we to say, "Through the point B, draw a line returning into itself, of which every point shall be at an equal distance from the point A." By this the definition of a circle would be got rid of, and rendered needless; but not the postulate implied in it; without that the demonstration could not stand. The circle being now described, let us proceed to the consequence. "Since B C D is a circle, the radius B A is equal to the radius C A." B A is equal to C A, not because B C D is a circle, but because B C D is a figure with the radii equal. Our warrant for assuming that such a figure about the centre A, with the radius B A, may be made to exist, is the postulate. Whether the admissibility of these postulates rests on intuition, or on proof, may be a matter of dispute; but in either case they are the premises on which the theorems depend; and while these are retained it would make no difference in the certainty of geometrical truths, though every definition in Euclid, and every technical term therein defined, were laid aside.

It is, perhaps, superfluous to dwell at so much length on what is so nearly self-evident; but when a distinction, obvious as it may appear, has been confounded, and by powerful intellects, it is better to say too much than too little for the purpose of rendering such mistakes impossible in future. I will, therefore detain the reader while I point out one of the absurd consequences flowing from the supposition that definitions, as such, are the premises in any of our reasonings, except such as relate to words only. If this supposition were true, we might argue correctly from true premises, and arrive at a false conclusion. We should only have to assume as a premise the definition of a nonentity; or rather of a name which has no entity corresponding to it. Let this, for instance, be our definition:

A dragon is a serpent breathing flame.

This proposition, considered only as a definition, is indisputably correct. A dragon *is* a serpent breathing flame: the word *means* that. The tacit assumption, indeed (if there were any such understood assertion), of the existence of an object with properties corresponding to the definition, would, in the present instance, be false. Out of this definition we may carve the premises of the following syllogism:

A dragon is a thing which breathes flame: A dragon is a serpent:

From which the conclusion is,

Therefore some serpent or serpents breathe flame:

an unexceptionable syllogism in the first mode of the third figure, in which both premises are true and yet the conclusion false; which every logician knows to be an absurdity. The conclusion being false and the syllogism correct, the premises can not be true. But the premises, considered as parts of a definition, are true. Therefore, the premises considered as parts of a definition can not be the real ones. The real premises must be--

A dragon is a *really existing* thing which breathes flame: A dragon is a *really existing* serpent:

which implied premises being false, the falsity of the conclusion presents no absurdity.

If we would determine what conclusion follows from the same ostensible premises when the tacit assumption of real existence is left out, let us, according to the recommendation in a previous page, substitute *means* for *is*. We then have--

Dragon is *a word meaning* a thing which breathes flame: Dragon is *a word meaning* a serpent:

From which the conclusion is,

Some *word or words which mean* a serpent, also mean a thing which breathes flame:

where the conclusion (as well as the premises) is true, and is the only kind of conclusion which can ever follow from a definition, namely, a proposition relating to the meaning of words.

There is still another shape into which we may transform this syllogism. We may suppose the middle term to be the designation neither of a thing nor of a name, but of an idea. We then have--

The *idea of* a dragon is *an idea of* a thing which breathes flame: The *idea of* a dragon is *an idea of* a serpent: Therefore, there is *an idea of* a serpent, which is *an idea of* a thing breathing flame.

Here the conclusion is true, and also the premises; but the premises are not definitions. They are propositions affirming that an idea existing in the mind, includes certain ideal elements. The truth of the conclusion follows from the existence of the psychological phenomenon called the idea of a dragon; and therefore still from the tacit assumption of a matter of fact.(45)

When, as in this last syllogism, the conclusion is a proposition respecting an idea, the assumption on which it depends may be merely that of the existence of an idea. But when the conclusion is a proposition concerning a Thing, the postulate involved in the definition which stands as the apparent premise, is the existence of a thing conformable to the definition, and not merely of an idea conformable to it. This assumption of real existence we always convey the impression that we intend to make, when we profess to define any name which is already known to be a name of really existing objects. On this account it is, that the assumption was not necessarily implied in the definition of a dragon, while there was no doubt of its being included in the definition of a circle.

§ 6. One of the circumstances which have contributed to keep up the notion, that demonstrative truths follow from definitions rather than from the postulates implied in those definitions, is, that the postulates, even in those sciences which are considered to surpass all others in demonstrative certainty, are not always exactly true. It is not true that a circle exists, or can be described, which has all its radii *exactly* equal. Such accuracy is ideal only; it is not found in nature, still less can it be realized by art. People had a difficulty, therefore, in conceiving that the most certain of all conclusions could rest on premises which, instead of being certainly true, are certainly not true to the full extent asserted. This apparent paradox will be examined when we come to treat of Demonstration; where we shall be able to show that as much of the postulate is true, as is required to support as much as is true of the conclusion. Philosophers, however, to whom this view had not occurred, or whom it did not satisfy, have thought it indispensable that there should be found in definitions something *more* certain, or at least more accurately true, than the implied postulate of the real existence of a corresponding object. And this something they flattered themselves they had found, when they laid it down that a definition is a statement and analysis not of the mere meaning of a word, nor yet of the nature of a thing, but of an idea. Thus, the proposition, "A circle is a plane figure bounded by a line all the points of which are at an equal distance from a given point within it," was considered by them, not as an assertion that any real circle has that property (which would not be exactly true), but that we *conceive* a circle as having it; that our abstract idea of a circle is an idea of a figure with its radii exactly equal.

Conformably to this it is said, that the subject-matter of mathematics, and of every other demonstrative

science, is not things as they really exist, but abstractions of the mind. A geometrical line is a line without breadth; but no such line exists in nature; it is a notion merely suggested to the mind by its experience of nature. The definition (it is said) is a definition of this mental line, not of any actual line: and it is only of the mental line, not of any line existing in nature, that the theorems of geometry are accurately true.

Allowing this doctrine respecting the nature of demonstrative truth to be correct (which, in a subsequent place, I shall endeavor to prove that it is not); even on that supposition, the conclusions which seem to follow from a definition, do not follow from the definition as such, but from an implied postulate. Even if it be true that there is no object in nature answering to the definition of a line, and that the geometrical properties of lines are not true of any lines in nature, but only of the idea of a line; the definition, at all events, postulates the real existence of such an idea: it assumes that the mind can frame, or rather has framed, the notion of length without breadth, and without any other sensible property whatever. To me, indeed, it appears that the mind can not form any such notion; it can not conceive length without breadth; it can only, in contemplating objects, attend to their length, exclusively of their other sensible qualities, and so determine what properties may be predicated of them in virtue of their length alone. If this be true, the postulate involved in the geometrical definition of a line, is the real existence, not of length without breadth, but merely of length, that is, of long objects. This is quite enough to support all the truths of geometry, since every property of a geometrical line is really a property of all physical objects in so far as possessing length. But even what I hold to be the false doctrine on the subject, leaves the conclusion that our reasonings are grounded on the matters of fact postulated in definitions, and not on the definitions themselves, entirely unaffected; and accordingly this conclusion is one which I have in common with Dr. Whewell, in his *Philosophy of the Inductive Sciences*: though, on the nature of demonstrative truth, Dr. Whewell's opinions are greatly at variance with mine. And here, as in many other instances, I gladly acknowledge that his writings are eminently serviceable in clearing from confusion the initial steps in the analysis of the mental processes, even where his views respecting the ultimate analysis are such as (though with unfeigned respect) I can not but regard as fundamentally erroneous.

§ 7. Although, according to the opinion here presented, Definitions are properly of names only, and not of things, it does not follow from this that definitions are arbitrary. How to define a name, may not only be an inquiry of considerable difficulty and intricacy, but may involve considerations going deep into the nature of the things which are denoted by the name. Such, for instance, are the inquiries which form the subjects of the most important of Plato's Dialogues; as, "What is rhetoric?" the topic of the Gorgias, or, "What is justice?" that of the Republic. Such, also, is the question scornfully asked by Pilate, "What is truth?" and the fundamental question with speculative moralists in all ages, "What is virtue?"

It would be a mistake to represent these difficult and noble inquiries as having nothing in view beyond ascertaining the conventional meaning of a name. They are inquiries not so much to determine what is, as what should be, the meaning of a name; which, like other practical questions of terminology, requires for its solution that we should enter, and sometimes enter very deeply, into the properties not merely of names but of the things named.

Although the meaning of every concrete general name resides in the attributes which it connotes, the objects were named before the attributes; as appears from the fact that in all languages, abstract names are mostly compounds or other derivatives of the concrete names which correspond to them. Connotative names, therefore, were, after proper names, the first which were used: and in the simpler cases, no doubt, a distinct connotation was present to the minds of those who first used the name, and was distinctly intended by them to be conveyed by it. The first person who used the word white, as applied to snow or to any other object, knew, no doubt, very well what quality he intended to predicate, and had a perfectly distinct conception in his mind of the attribute signified by the name.

But where the resemblances and differences on which our classifications are founded are not of this palpable and easily determinable kind; especially where they consist not in any one quality but in a number of qualities, the effects of which, being blended together, are not very easily discriminated, and referred each to its true

source; it often happens that names are applied to namable objects, with no distinct connotation present to the minds of those who apply them. They are only influenced by a general resemblance between the new object and all or some of the old familiar objects which they have been accustomed to call by that name. This, as we have seen, is the law which even the mind of the philosopher must follow, in giving names to the simple elementary feelings of our nature: but, where the things to be named are complex wholes, a philosopher is not content with noticing a general resemblance; he examines what the resemblance consists in: and he only gives the same name to things which resemble one another in the same definite particulars. The philosopher, therefore, habitually employs his general names with a definite connotation. But language was not made, and can only in some small degree be mended, by philosophers. In the minds of the real arbiters of language, general names, especially where the classes they denote can not be brought before the tribunal of the outward senses to be identified and discriminated, connote little more than a vague gross resemblance to the things which they were earliest, or have been most, accustomed to call by those names. When, for instance, ordinary persons predicate the words *just* or *unjust* of any action, *noble* or *mean* of any sentiment, expression, or demeanor, *statesman* or *charlatan* of any personage figuring in politics, do they mean to affirm of those various subjects any determinate attributes, of whatever kind? No: they merely recognize, as they think, some likeness, more or less vague and loose, between these and some other things which they have been accustomed to denominate or to hear denominated by those appellations.

Language, as Sir James Mackintosh used to say of governments, "is not made, but grows." A name is not imposed at once and by previous purpose upon a *class* of objects, but is first applied to one thing, and then extended by a series of transitions to another and another. By this process (as has been remarked by several writers, and illustrated with great force and clearness by Dugald Stewart in his Philosophical Essays) a name not unfrequently passes by successive links of resemblance from one object to another, until it becomes applied to things having nothing in common with the first things to which the name was given; which, however, do not, for that reason, drop the name; so that it at last denotes a confused huddle of objects, having nothing whatever in common; and connotes nothing, not even a vague and general resemblance. When a name has fallen into this state, in which by predicating it of any object we assert literally nothing about the object, it has become unfit for the purposes either of thought or of the communication of thought; and can only be made serviceable by stripping it of some part of its multifarious denotation, and confining it to objects possessed of some attributes in common, which it may be made to connote. Such are the inconveniences of a language which "is not made, but grows." Like the governments which are in a similar case, it may be compared to a road which is not made but has made itself: it requires continual mending in order to be passable.

From this it is already evident, why the question respecting the definition of an abstract name is often one of so much difficulty. The question, What is justice? is, in other words, What is the attribute which mankind mean to predicate when they call an action just? To which the first answer is, that having come to no precise agreement on the point, they do not mean to predicate distinctly any attribute at all. Nevertheless, all believe that there is some common attribute belonging to all the actions which they are in the habit of calling just. The question then must be, whether there is any such common attribute? and, in the first place, whether mankind agree sufficiently with one another as to the particular actions which they do or do not call just, to render the inquiry, what quality those actions have in common, a possible one: if so, whether the actions really have any quality in common; and if they have, what it is. Of these three, the first alone is an inquiry into usage and convention; the other two are inquiries into matters of fact. And if the second question (whether the actions form a class at all) has been answered negatively, there remains a fourth, often more arduous than all the rest, namely, how best to form a class artificially, which the name may denote.

And here it is fitting to remark, that the study of the spontaneous growth of languages is of the utmost importance to those who would logically remodel them. The classifications rudely made by established language, when retouched, as they almost all require to be, by the hands of the logician, are often themselves excellently suited to his purposes. As compared with the classifications of a philosopher, they are like the customary law of a country, which has grown up as it were spontaneously, compared with laws methodized and digested into a code: the former are a far less perfect instrument than the latter; but being the result of a

long, though unscientific, course of experience, they contain a mass of materials which may be made very usefully available in the formation of the systematic body of written law. In like manner, the established grouping of objects under a common name, even when founded only on a gross and general resemblance, is evidence, in the first place, that the resemblance is obvious, and therefore considerable; and, in the next place, that it is a resemblance which has struck great numbers of persons during a series of years and ages. Even when a name, by successive extensions, has come to be applied to things among which there does not exist this gross resemblance common to them all, still at every step in its progress we shall find such a resemblance. And these transitions of the meaning of words are often an index to real connections between the things denoted by them, which might otherwise escape the notice of thinkers; of those at least who, from using a different language, or from any difference in their habitual associations, have fixed their attention in preference on some other aspect of the things. The history of philosophy abounds in examples of such oversights, committed for want of perceiving the hidden link that connected together the seemingly disparate meanings of some ambiguous word.(46)

Whenever the inquiry into the definition of the name of any real object consists of any thing else than a mere comparison of authorities, we tacitly assume that a meaning must be found for the name, compatible with its continuing to denote, if possible all, but at any rate the greater or the more important part, of the things of which it is commonly predicated. The inquiry, therefore, into the definition, is an inquiry into the resemblances and differences among those things: whether there be any resemblance running through them all; if not, through what portion of them such a general resemblance can be traced: and finally, what are the common attributes, the possession of which gives to them all, or to that portion of them, the character of resemblance which has led to their being classed together. When these common attributes have been ascertained and specified, the name which belongs in common to the resembling objects acquires a distinct instead of a vague connotation; and by possessing this distinct connotation, becomes susceptible of definition.

In giving a distinct connotation to the general name, the philosopher will endeavor to fix upon such attributes as, while they are common to all the things usually denoted by the name, are also of greatest importance in themselves; either directly, or from the number, the conspicuousness, or the interesting character, of the consequences to which they lead. He will select, as far as possible, such *differentiæ* as lead to the greatest number of interesting *propria*. For these, rather than the more obscure and recondite qualities on which they often depend, give that general character and aspect to a set of objects, which determine the groups into which they naturally fall. But to penetrate to the more hidden agreement on which these obvious and superficial agreements depend, is often one of the most difficult of scientific problems. As it is among the most difficult, so it seldom fails to be among the most important. And since upon the result of this inquiry respecting the causes of the properties of a class of things, there incidentally depends the question what shall be the meaning of a word; some of the most profound and most valuable investigations which philosophy presents to us, have been introduced by, and have offered themselves under the guise of, inquiries into the definition of a name.

Book II.

OF REASONING.

{~GREEK CAPITAL LETTER DELTA~}{~GREEK SMALL LETTER IOTA~}{~GREEK SMALL LETTER OMEGA~}{~GREEK SMALL LETTER RHO~}{~GREEK SMALL LETTER IOTA~}{~GREEK SMALL LETTER SIGMA~}{~GREEK SMALL LETTER MU~}{~GREEK SMALL LETTER EPSILON WITH OXIA~}{~GREEK SMALL LETTER NU~}{~GREEK SMALL LETTER OMEGA~}{~GREEK SMALL LETTER NU~} {~GREEK SMALL LETTER DELTA~}{~GREEK SMALL LETTER EPSILON~}{~GREEK SMALL LETTER TAU~}{~GREEK SMALL LETTER OMICRON~}{~GREEK SMALL LETTER UPSILON WITH OXIA~}{~GREEK SMALL LETTER TAU~}{~GREEK SMALL LETTER OMEGA~}{~GREEK SMALL LETTER NU~} {~GREEK SMALL LETTER LAMDA~}{~GREEK SMALL LETTER EPSILON WITH OXIA~}{~GREEK SMALL LETTER GAMMA~}{~GREEK SMALL LETTER OMEGA~}{~GREEK SMALL LETTER MU~}{~GREEK SMALL LETTER