

**CHAPTER VII.**

## OF THE NATURE OF CLASSIFICATION, AND THE FIVE PREDICABLES.

§ 1. In examining into the nature of general propositions, we have adverted much less than is usual with Logicians, to the ideas of a Class, and Classification; ideas which, since the Realist doctrine of General Substances went out of vogue, have formed the basis of almost every attempt at a philosophical theory of general terms and general propositions. We have considered general names as having a meaning, quite independently of their being the names of classes. That circumstance is in truth accidental, it being wholly immaterial to the signification of the name whether there are many objects or only one to which it happens to be applicable, or whether there be any at all. God is as much a general term to the Christian or the Jew as to the Polytheist; and dragon, hippogriff, chimera, mermaid, ghost, are as much so as if real objects existed, corresponding to those names. Every name the signification of which is constituted by attributes, is potentially a name of an indefinite number of objects; but it needs not be actually the name of any; and if of any, it may be the name of only one. As soon as we employ a name to connote attributes, the things, be they more or fewer, which happen to possess those attributes, are constituted, *ipso facto*, a class. But in predicating the name we predicate only the attributes; and the fact of belonging to a class does not, in ordinary cases, come into view at all.

Although, however, Predication does not presuppose Classification, and although the theory of Names and of Propositions is not cleared up, but only encumbered, by intruding the idea of classification into it, there is nevertheless a close connexion between Classification and the employment of General Names. By every general name which we introduce, we create a class, if there be any things, real or imaginary, to compose it; that is, any Things corresponding to the signification of the name. Classes, therefore, mostly owe their existence to general language. But general language, also, though that is not the most common case, sometimes owes its existence to classes. A general, which is as much as to say a significant, name, is indeed mostly introduced because we have a signification to express by it; because we need a word by means of which to predicate the attributes which it connotes. But it is also true that a name is sometimes introduced because we have found it convenient to create a class; because we have thought it useful for the regulation of our mental operations, that a certain group of objects should be thought of together. A naturalist, for purposes connected with his particular science, sees reason to distribute the animal or vegetable creation into certain groups rather than into any others, and he requires a name to bind, as it were, each of his groups together. It must not however be supposed that such names, when introduced, differ in any respect, as to their mode of signification, from other connotative names. The classes which they denote are, as much as any other classes, constituted by certain common attributes, and their names are significant of those attributes, and of nothing else. The names of Cuvier's classes and orders, *Plantigrades*, *Digitigrades*, &c., are as much the expression of attributes as if those names had preceded, instead of growing out of, his classification of animals. The only peculiarity of the case is, that the convenience of classification was here the primary motive for introducing the names; while in other cases the name is introduced as a means of predication, and the formation of a class denoted by it is only an indirect consequence.

The principles which ought to regulate Classification as a logical process subservient to the investigation of truth, cannot be discussed to any purpose until a much later stage of our inquiry. But, of classification as resulting from, and implied in, the fact of employing general language, we cannot forbear to treat here, without leaving the theory of general names, and of their employment in predication, mutilated and formless.

§ 2. This portion of the theory of general language is the subject of what is termed the doctrine of the Predicables; a set of distinctions handed down from Aristotle, and his follower Porphyry, many of which have taken a firm root in scientific, and some of them even in popular, phraseology. The predicables are a five-fold division of General Names, not grounded as usual on a difference in their meaning, that is, in the attribute which they connote, but on a difference in the kind of class which they denote. We may predicate of a thing five different varieties of class-name:--

A *genus* of the thing ({{~GREEK SMALL LETTER GAMMA~}}{{~GREEK SMALL LETTER EPSILON WITH OXIA~}}{{~GREEK SMALL LETTER NU~}}{{~GREEK SMALL LETTER OMICRON~}}{{~GREEK SMALL LETTER FINAL SIGMA~}}). A *species* ({{~GREEK SMALL LETTER EPSILON~}}{{~GREEK SMALL LETTER IOTA WITH PSILI AND OXIA~}}{{~GREEK SMALL LETTER DELTA~}}{{~GREEK SMALL LETTER OMICRON~}}{{~GREEK SMALL LETTER FINAL SIGMA~}}). A *differentia* ({{~GREEK SMALL LETTER DELTA~}}{{~GREEK SMALL LETTER IOTA~}}{{~GREEK SMALL LETTER ALPHA~}}{{~GREEK SMALL LETTER PHI~}}{{~GREEK SMALL LETTER OMICRON~}}{{~GREEK SMALL LETTER RHO~}}{{~GREEK SMALL LETTER ALPHA WITH VARIA~}}). A *proprium* ({{~GREEK SMALL LETTER IOTA WITH PSILI~}}{{~GREEK SMALL LETTER DELTA~}}{{~GREEK SMALL LETTER IOTA~}}{{~GREEK SMALL LETTER OMICRON WITH OXIA~}}{{~GREEK SMALL LETTER NU~}}). An *accidens* ({{~GREEK SMALL LETTER SIGMA~}}{{~GREEK SMALL LETTER UPSILON~}}{{~GREEK SMALL LETTER MU~}}{{~GREEK SMALL LETTER BETA~}}{{~GREEK SMALL LETTER EPSILON~}}{{~GREEK SMALL LETTER BETA~}}{{~GREEK SMALL LETTER ETA~}}{{~GREEK SMALL LETTER KAPPA~}}{{~GREEK SMALL LETTER OMICRON WITH OXIA~}}{{~GREEK SMALL LETTER FINAL SIGMA~}}).

It is to be remarked of these distinctions, that they express, not what the predicate is in its own meaning, but what relation it bears to the subject of which it happens on the particular occasion to be predicated. There are not some names which are exclusively genera, and others which are exclusively species, or differentia; but the same name is referred to one or another Predicable, according to the subject of which it is predicated on the particular occasion. *Animal*, for instance, is a genus with respect to man, or John; a species with respect to Substance, or Being. *Rectangular* is one of the Differentia of a geometrical square; it is merely one of the Accidentia of the table at which I am writing. The words genus, species, &c., are therefore relative terms; they are names applied to certain predicates, to express the relation between them and some given subject: a relation grounded, as we shall see, not on what the predicate connotes, but on the class which it denotes, and on the place which, in some given classification, that class occupies relatively to the particular subject.

§ 3. Of these five names, two, Genus and Species, are not only used by naturalists in a technical acceptation not precisely agreeing with their philosophical meaning, but have also acquired a popular acceptation, much more general than either. In this popular sense any two classes, one of which includes the whole of the other and more, may be called a Genus and a Species. Such, for instance, are Animal and Man; Man and Mathematician. Animal is a genus; Man and Brute are its two species; or we may divide it into a greater number of species, as man, horse, dog, &c. *Biped*, or *two-footed animal*, may also be considered a genus, of which man and bird are two species. *Taste* is a genus, of which sweet taste, sour taste, salt taste, &c. are species. *Virtue* is a genus; justice, prudence, courage, fortitude, generosity, &c. are its species.

The same class which is a genus with reference to the sub-classes or species included in it, may be itself a species with reference to a more comprehensive, or, as it is often called, a superior, genus. Man is a species with reference to animal, but a genus with reference to the species mathematician. Animal is a genus, divided into two species, man and brute; but animal is also a species, which, with another species, vegetable, makes up the genus, organized being. Biped is a genus with reference to man and bird, but a species with respect to the superior genus, animal. Taste is a genus divided into species, but also a species of the genus sensation. Virtue, a genus with reference to justice, temperance, &c., is one of the species of the genus, mental quality.

In this popular sense the words Genus and Species have passed into common discourse. And it should be observed that, in ordinary parlance, not the name of the class, but the class itself, is said to be the genus or species; not, of course, the class in the sense of each individual of that class, but the individuals collectively, considered as an aggregate whole; the name by which the class is designated being then called not the genus or species, but the generic or specific name. And this is an admissible form of expression; nor is it of any importance which of the two modes of speaking we adopt, provided the rest of our language is consistent with it; but if we call the class itself the genus, we must not talk of predicating the genus. We predicate of man the *name* mortal; and by predicating the name, we may be said, in an intelligible sense, to predicate what the

name expresses, the *attribute* mortality; but in no allowable sense of the word predication do we predicate of man the *class* mortal. We predicate of him the fact of *belonging* to the class.

By the Aristotelian logicians, the terms genus and species were used in a more restricted sense. They did not admit every class which could be divided into other classes to be a genus, or every class which could be included in a larger class to be a species. Animal was by them considered a genus; and man and brute co-ordinate species under that genus: *biped* would not have been admitted to be a genus with reference to man, but a *proprium* or *accidens* only. It was requisite, according to their theory, that genus and species should be of the *essence* of the subject. *Animal* was of the essence of man; *biped* was not. And in every classification they considered some one class as the lowest or *infima* species. Man, for instance, was a lowest species. Any further divisions into which the class might be capable of being broken down, as man into white, black, and red man, or into priest and layman, they did not admit to be species.

It has been seen, however, in the preceding chapter, that the distinction between the essence of a class, and the attributes or properties which are not of its essence--a distinction which has given occasion to so much abstruse speculation, and to which so mysterious a character was formerly, and by many writers is still, attached,--amounts to nothing more than the difference between those attributes of the class which are, and those which are not, involved in the signification of the class-name. As applied to individuals, the word Essence, we found, has no meaning, except in connexion with the exploded tenets of the Realists; and what the schoolmen chose to call the essence of an individual, was simply the essence of the class to which that individual was most familiarly referred.

Is there no difference, then, save this merely verbal one, between the classes which the schoolmen admitted to be genera or species, and those to which they refused the title? Is it an error to regard some of the differences which exist among objects as differences *in kind* (*genere* or *specie*), and others only as differences in the accidents? Were the schoolmen right or wrong in giving to some of the classes into which things may be divided, the name of *kinds*, and considering others as secondary divisions, grounded on differences of a comparatively superficial nature? Examination will show that the Aristotelians did mean something by this distinction, and something important; but which, being but indistinctly conceived, was inadequately expressed by the phraseology of essences, and by the various other modes of speech to which they had recourse.

§ 4. It is a fundamental principle in logic, that the power of framing classes is unlimited, as long as there is any (even the smallest) difference to found a distinction upon. Take any attribute whatever, and if some things have it, and others have not, we may ground on the attribute a division of all things into two classes; and we actually do so, the moment we create a name which connotes the attribute. The number of possible classes, therefore, is boundless; and there are as many actual classes (either of real or of imaginary things) as there are of general names, positive and negative together.

But if we contemplate any one of the classes so formed, such as the class animal or plant, or the class sulphur or phosphorus, or the class white or red, and consider in what particulars the individuals included in the class differ from those which do not come within it, we find a very remarkable diversity in this respect between some classes and others. There are some classes, the things contained in which differ from other things only in certain particulars which may be numbered; while others differ in more than can be numbered, more even than we need ever expect to know. Some classes have little or nothing in common to characterise them by, except precisely what is connoted by the name: white things, for example, are not distinguished by any common properties, except whiteness; or if they are, it is only by such as are in some way dependent on, or connected with, whiteness. But a hundred generations have not exhausted the common properties of animals or of plants, of sulphur or of phosphorus; nor do we suppose them to be exhaustible, but proceed to new observations and experiments, in the full confidence of discovering new properties which were by no means implied in those we previously knew. While, if any one were to propose for investigation the common properties of all things which are of the same colour, the same shape, or the same specific gravity, the absurdity would be palpable. We have no ground to believe that any such common properties exist, except such as may be shown to be

involved in the supposition itself, or to be derivable from it by some law of causation. It appears, therefore, that the properties, on which we ground our classes, sometimes exhaust all that the class has in common, or contain it all by some mode of implication; but in other instances we make a selection of a few properties from among not only a greater number, but a number inexhaustible by us, and to which as we know no bounds, they may, so far as we are concerned, be regarded as infinite.

There is no impropriety in saying that of these two classifications, the one answers to a much more radical distinction in the things themselves, than the other does. And if any one even chooses to say that the one classification is made by nature, the other by us for our convenience, he will be right; provided he means no more than this: Where a certain apparent difference between things (although perhaps in itself of little moment) answers to we know not what number of other differences, pervading not only their known properties but properties yet undiscovered, it is not optional but imperative to recognise this difference as the foundation of a specific distinction: while, on the contrary, differences that are merely finite and determinate, like those designated by the words white, black, or red, may be disregarded if the purpose for which the classification is made does not require attention to those particular properties. The differences, however, are made by nature, in both cases; while the recognition of those differences as grounds of classification and of naming, is, equally in both cases, the act of man: only in the one case, the ends of language and of classification would be subverted if no notice were taken of the difference, while in the other case, the necessity of taking notice of it depends on the importance or unimportance of the particular qualities in which the difference happens to consist.

Now, these classes, distinguished by unknown multitudes of properties, and not solely by a few determinate ones, are the only classes which, by the Aristotelian logicians, were considered as genera or species. Differences which extended only to a certain property or properties, and there terminated, they considered as differences only in the *accidents* of things; but where any class differed from other things by an infinite series of differences, known and unknown, they considered the distinction as one of *kind*, and spoke of it as being an *essential* difference, which is also one of the usual meanings of that vague expression at the present day.

Conceiving the schoolmen to have been justified in drawing a broad line of separation between these two kinds of classes and of class-distinctions, I shall not only retain the division itself, but continue to express it in their language. According to that language, the proximate (or lowest) Kind to which any individual is referrible, is called its species. Conformably to this, Sir Isaac Newton would be said to be of the species man. There are indeed numerous sub-classes included in the class man, to which Newton also belongs; as, for example, Christian, and Englishman, and Mathematician. But these, though distinct classes, are not, in our sense of the term, distinct Kinds of men. A Christian, for example, differs from other human beings; but he differs only in the attribute which the word expresses, namely, belief in Christianity, and whatever else that implies, either as involved in the fact itself, or connected with it through some law of cause and effect. We should never think of inquiring what properties, unconnected with Christianity either as cause or effect, are common to all Christians and peculiar to them; while in regard to all Men, physiologists are perpetually carrying on such an inquiry; nor is the answer ever likely to be completed. Man, therefore, we may call a species; Christian, or Mathematician, we cannot.

Note here, that it is by no means intended to imply that there may not be different Kinds, or logical species, of man. The various races and temperaments, the two sexes, and even the various ages, maybe differences of kind, within our meaning of the term. I do not say that they are so. For in the progress of physiology it may almost be said to be made out, that the differences which really exist between different races, sexes, &c., follow as consequences, under laws of nature, from a small number of primary differences which can be precisely determined, and which, as the phrase is, *account for* all the rest. If this be so, these are not distinctions in kind; no more than Christian, Jew, Mussulman, and Pagan, a difference which also carries many consequences along with it. And in this way classes are often mistaken for real kinds, which are afterwards proved not to be so. But if it turned out, that the differences were not capable of being thus accounted for, then Caucasian, Mongolian, Negro, &c., would be really different Kinds of human beings, and

entitled to be ranked as species by the logician; though not by the naturalist. For (as already noticed) the word species is used in a very different signification in logic and in natural history. By the naturalist, organized beings are never said to be of different species, if it is supposed that they could possibly have descended from the same stock. That, however, is a sense artificially given to the word, for the technical purposes of a particular science. To the logician, if a negro and a white man differ in the same manner (however less in degree) as a horse and a camel do, that is, if their differences are inexhaustible, and not referrible to any common cause, they are different species, whether they are descended from common ancestors or not. But if their differences can all be traced to climate and habits, or to some one special difference in structure, they are not, in the logician's view, specifically distinct.

When the *infima species*, or proximate Kind, to which an individual belongs, has been ascertained, the properties common to that Kind include necessarily the whole of the common properties of every other real Kind to which the individual can be referrible. Let the individual, for example, be Socrates, and the proximate Kind, man. Animal, or living creature, is also a real Kind, and includes Socrates; but since it likewise includes man, or in other words, since all men are animals, the properties common to animals form a portion of the common properties of the sub-class, man: and if there be any class which includes Socrates without including man, that class is not a real Kind. Let the class, for example, be *flat-nosed*; that being a class which includes Socrates, without including all men. To determine whether it is a real Kind, we must ask ourselves this question: Have all flat-nosed animals, in addition to whatever is implied in their flat noses, any common properties, other than those which are common to all animals whatever? If they had; if a flat nose were a mark or index to an indefinite number of other peculiarities, not deducible from the former by any ascertainable law; then out of the class man we might cut another class, flat-nosed man, which, according to our definition, would be a Kind. But if we could do this, man would not be, as it was assumed to be, the proximate Kind. Therefore, the properties of the proximate Kind do comprehend those (whether known or unknown) of all other Kinds to which the individual belongs; which was the point we undertook to prove. And hence, every other Kind which is predicable of the individual, will be to the proximate Kind in the relation of a genus, according to even the popular acceptance of the terms genus and species; that is, it will be a larger class, including it and more.

We are now able to fix the logical meaning of these terms. Every class which is a real Kind, that is, which is distinguished from all other classes by an indeterminate multitude of properties not derivable from one another, is either a genus or a species. A Kind which is not divisible into other Kinds, cannot be a genus, because it has no species under it; but it is itself a species, both with reference to the individuals below and to the genera above, (*Species Prædicabilis* and *Species Subjicibilis*.) But every Kind which admits of division into real Kinds (as animal into quadruped, bird, &c., or quadruped into various species of quadrupeds) is a genus to all below it, a species to all genera in which it is itself included. And here we may close this part of the discussion, and pass to the three remaining predicables, *Differentia*, *Proprium*, and *Accidens*.

§ 5. To begin with *Differentia*. This word is correlative with the words genus and species, and as all admit, it signifies the attribute which distinguishes a given species from every other species of the same genus. This is so far clear: but we may still ask, which of the distinguishing attributes it signifies. For we have seen that every Kind (and a species must be a Kind) is distinguished from other Kinds not by any one attribute, but by an indefinite number. Man, for instance, is a species of the genus animal; Rational (or rationality, for it is of no consequence whether we use the concrete or the abstract form) is generally assigned by logicians as the *Differentia*; and doubtless this attribute serves the purpose of distinction: but it has also been remarked of man, that he is a cooking animal; the only animal that dresses its food. This, therefore, is another of the attributes by which the species man is distinguished from other species of the same genus: would this attribute serve equally well for a *differentia*? The Aristotelians say No; having laid it down that the *differentia* must, like the genus and species, be of the *essence* of the subject.

And here we lose even that vestige of a meaning grounded in the nature of the things themselves, which may be supposed to be attached to the word *essence* when it is said that genus and species must be of the *essence*

of the thing. There can be no doubt that when the schoolmen talked of the essences of things as opposed to their accidents, they had confusedly in view the distinction between differences of kind, and the differences which are not of kind; they meant to intimate that genera and species must be Kinds. Their notion of the essence of a thing was a vague notion of a something which makes it what it is, *i.e.*, which makes it the Kind of thing that it is--which causes it to have all that variety of properties which distinguish its Kind. But when the matter came to be looked at more closely, nobody could discover what caused the thing to have all those properties, nor even that there was anything which caused it to have them. Logicians, however, not liking to admit this, and being unable to detect what made the thing to be what it was, satisfied themselves with what made it to be what it was called. Of the innumerable properties, known and unknown, that are common to the class man, a portion only, and of course a very small portion, are connoted by its name; these few, however, will naturally have been thus distinguished from the rest either for their greater obviousness, or for greater supposed importance. These properties, then, which were connoted by the name, logicians seized upon, and called them the essence of the species; and not stopping there, they affirmed them, in the case of the *infima species*, to be the essence of the individual too; for it was their maxim, that the species contained the "whole essence" of the thing. Metaphysics, that fertile field of delusion propagated by language, does not afford a more signal instance of such delusion. On this account it was that rationality, being connoted by the name man, was allowed to be a differentia of the class; but the peculiarity of cooking their food, not being connoted, was relegated to the class of accidental properties.

The distinction, therefore, between Differentia, Proprium, and Accidens, is not founded in the nature of things, but in the connotation of names; and we must seek it there, if we wish to find what it is.

From the fact that the genus includes the species, in other words *denotes* more than the species, or is predicable of a greater number of individuals, it follows that the species must connote more than the genus. It must connote all the attributes which the genus connotes, or there would be nothing to prevent it from denoting individuals not included in the genus. And it must connote something besides, otherwise it would include the whole genus. Animal denotes all the individuals denoted by man, and many more. Man, therefore, must connote all that animal connotes, otherwise there might be men who are not animals; and it must connote something more than animal connotes, otherwise all animals would be men. This surplus of connotation--this which the species connotes over and above the connotation of the genus--is the Differentia, or specific difference; or, to state the same proposition in other words, the Differentia is that which must be added to the connotation of the genus, to complete the connotation of the species.

The word man, for instance, exclusively of what it connotes in common with animal, also connotes rationality, and at least some approximation to that external form, which we all know, but which, as we have no name for it considered in itself, we are content to call the human. The differentia, or specific difference, therefore, of man, as referred to the genus animal, is that outward form and the possession of reason. The Aristotelians said, the possession of reason, without the outward form. But if they adhered to this, they would have been obliged to call the Houyhnhms men. The question never arose, and they were never called upon to decide how such a case would have affected their notion of essentiality. However this may be, they were satisfied with taking such a portion of the differentia as sufficed to distinguish the species from all other *existing* things, although by so doing they might not exhaust the connotation of the name.

§ 6. And here, to prevent the notion of differentia from being restricted within too narrow limits, it is necessary to remark, that a species, even as referred to the same genus, will not always have the same differentia, but a different one, according to the principle and purpose which preside over the particular classification. For example, a naturalist surveys the various kinds of animals, and looks out for the classification of them most in accordance with the order in which, for zoological purposes, he thinks it desirable that our ideas should arrange themselves. With this view he finds it advisable that one of his fundamental divisions should be into warm-blooded and cold-blooded animals; or into animals which breathe with lungs and those which breathe with gills; or into carnivorous, and frugivorous or graminivorous; or into those which walk on the flat part and those which walk on the extremity of the foot, a distinction on which

some of Cuvier's families are founded. In doing this, the naturalist creates so many new classes, which are by no means those to which the individual animal is familiarly and spontaneously referred; nor should we ever think of assigning to them so prominent a position in our arrangement of the animal kingdom, unless for a preconceived purpose of scientific convenience. And to the liberty of doing this there is no limit. In the examples we have given, most of the classes are real Kinds, since each of the peculiarities is an index to a multitude of properties, belonging to the class which it characterizes: but even if the case were otherwise--if the other properties of those classes could all be derived, by any process known to us, from the one peculiarity on which the class is founded--even then, if those derivative properties were of primary importance for the purposes of the naturalist, he would be warranted in founding his primary divisions on them.

If, however, practical convenience is a sufficient warrant for making the main demarcations in our arrangement of objects run in lines not coinciding with any distinction of Kind, and so creating genera and species in the popular sense which are not genera or species in the rigorous sense at all; *à fortiori* must we be warranted, when our genera and species *are* real genera and species, in marking the distinction between them by those of their properties which considerations of practical convenience most strongly recommend. If we cut a species out of a given genus--the species man, for instance, out of the genus animal--with an intention on our part that the peculiarity by which we are to be guided in the application of the name man should be rationality, then rationality is the differentia of the species man. Suppose, however, that, being naturalists, we, for the purposes of our particular study, cut out of the genus animal the same species man, but with an intention that the distinction between man and all other species of animal should be, not rationality, but the possession of "four incisors in each jaw, tusks solitary, and erect posture." It is evident that the word man, when used by us as naturalists, no longer connotes rationality, but connotes the three other properties specified; for that which we have expressly in view when we impose a name, assuredly forms part of the meaning of that name. We may, therefore, lay it down as a maxim, that wherever there is a Genus, and a Species marked out from that genus by an assignable differentia, the name of the species must be connotative, and must connote the differentia; but the connotation may be special--not involved in the signification of the term as ordinarily used, but given to it when employed as a term of art or science. The word Man, in common use, connotes rationality and a certain form, but does not connote the number or character of the teeth: in the Linnæan system it connotes the number of incisor and canine teeth, but does not connote rationality nor any particular form. The word *man* has, therefore, two different meanings; although not commonly considered as ambiguous, because it happens in both cases to *denote* the same individual objects. But a case is conceivable in which the ambiguity would become evident: we have only to imagine that some new kind of animal were discovered, having Linnæus's three characteristics of humanity, but not rational, or not of the human form. In ordinary parlance these animals would not be called men; but in natural history they must still be called so by those, if any there be, who adhere to the Linnæan classification; and the question would arise, whether the word should continue to be used in two senses, or the classification be given up, and the technical sense of the term be abandoned along with it.

Words not otherwise connotative may, in the mode just adverted to, acquire a special or technical connotation. Thus the word whiteness, as we have so often remarked, connotes nothing; it merely denotes the attribute corresponding to a certain sensation: but if we are making a classification of colours, and desire to justify, or even merely to point out, the particular place assigned to whiteness in our arrangement, we may define it "the colour produced by the mixture of all the simple rays;" and this fact, though by no means implied in the meaning of the word whiteness as ordinarily used, but only known by subsequent scientific investigation, is part of its meaning in the particular essay or treatise, and becomes the differentia of the species.(24)

The differentia, therefore, of a species, may be defined to be, that part of the connotation of the specific name, whether ordinary, or special and technical, which distinguishes the species in question from all other species of the genus to which on the particular occasion we are referring it.

§ 7. Having disposed of Genus, Species, and Differentia, we shall not find much difficulty in attaining a clear conception of the distinction between the other two predicables, as well as between them and the first three.

In the Aristotelian phraseology, Genus and Differentia are of the *essence* of the subject; by which, as we have seen, is really meant that the properties signified by the genus and those signified by the differentia, form part of the connotation of the name denoting the species. Proprium and Accidens, on the other hand, form no part of the essence, but are predicated of the species only *accidentally*. Both are Accidents, in the wider sense in which the accidents of a thing are opposed to its essence; though, in the doctrine of the Predicables, Accidens is used for one sort of accident only, Proprium being another sort. Proprium, continue the schoolmen, is predicated *accidentally*, indeed, but *necessarily*; or, as they further explain it, signifies an attribute which is not indeed part of the essence, but which flows from, or is a consequence of, the essence, and is, therefore, inseparably attached to the species; *e.g.* the various properties of a triangle, which, though no part of its definition, must necessarily be possessed by whatever comes under that definition. Accidens, on the contrary, has no connexion whatever with the essence, but may come and go, and the species still remain what it was before. If a species could exist without its Propria, it must be capable of existing without that on which its Propria are necessarily consequent, and therefore without its essence, without that which constitutes it a species. But an Accidens, whether separable or inseparable from the species in actual experience, may be supposed separated, without the necessity of supposing any other alteration; or at least, without supposing any of the essential properties of the species to be altered, since with them an Accidens has no connexion.

A Proprium, therefore, of the species, may be defined, any attribute which belongs to all the individuals included in the species, and which, although not connoted by the specific name, (either ordinarily if the classification we are considering be for ordinary purposes, or specially if it be for a special purpose,) yet follows from some attribute which the name either ordinarily or specially connotes.

One attribute may follow from another in two ways; and there are consequently two kinds of Proprium. It may follow as a conclusion follows premisses, or it may follow as an effect follows a cause. Thus, the attribute of having the opposite sides equal, which is not one of those connoted by the word Parallelogram, nevertheless follows from those connoted by it, namely, from having the opposite sides straight lines and parallel, and the number of sides four. The attribute, therefore, of having the opposite sides equal, is a Proprium of the class parallelogram; and a Proprium of the first kind, which follows from the connoted attributes by way of *demonstration*. The attribute of being capable of understanding language, is a Proprium of the species man, since, without being connoted by the word, it follows from an attribute which the word does connote, *viz.* from the attribute of rationality. But this is a Proprium of the second kind, which follows by way of *causation*. How it is that one property of a thing follows, or can be inferred, from another; under what conditions this is possible, and what is the exact meaning of the phrase; are among the questions which will occupy us in the two succeeding Books. At present it needs only be said, that whether a Proprium follows by demonstration or by causation, it follows *necessarily*; that is to say, it *cannot but* follow, consistently with some law which we regard as a part of the constitution either of our thinking faculty or of the universe.

§ 8. Under the remaining predicable, Accidens, are included all attributes of a thing which are neither involved in the signification of the name, (whether ordinarily or as a term of art,) nor have, so far as we know, any necessary connexion with attributes which are so involved. They are commonly divided into Separable and Inseparable Accidents. Inseparable accidents are those which--although we know of no connexion between them and the attributes constitutive of the species, and although, therefore, so far as we are aware, they might be absent without making the name inapplicable and the species a different species--are yet never in fact known to be absent. A concise mode of expressing the same meaning is, that inseparable accidents are properties which are universal to the species, but not necessary to it. Thus, blackness is an attribute of a crow, and, as far as we know, a universal one. But if we were to discover a race of white birds, in other respects resembling crows, we should not say, These are not crows; we should say, These are white crows. Crow, therefore, does not connote blackness; nor, from any of the attributes which it does connote, whether as a word in popular use or as a term of art, could blackness be inferred. Not only, therefore, can we conceive a white crow, but we know of no reason why such an animal should not exist. Since, however, none but black crows are known to exist, blackness, in the present state of our knowledge, ranks as an accident, but an inseparable accident, of the species crow.

Separable Accidents are those which are found, in point of fact, to be sometimes absent from the species; which are not only not necessary, but not even universal. They are such as do not belong to every individual of the species, but only to some individuals; or if to all, not at all times. Thus the colour of an European is one of the separable accidents of the species man, because it is not an attribute of all human creatures. Being born, is also (speaking in the logical sense) a separable accident of the species man, because, although an attribute of all human beings, it is so only at one particular time. *A fortiori* those attributes which are not constant even in the same individual, as, to be in one or in another place, to be hot or cold, sitting or walking, must be ranked as separable accidents.