II.—PROPOSITIONS WITH A VIEW TO PROOF.

THAT the view taken of the Proposition depends largely on the purpose for which it is required, is not perhaps likely now to be seriously disputed. As Mr. Venn notices,¹ "Logicians have been too much in the habit of considering that there could be only one account given of the import of propositions," whereas "when we are discussing methods rather than theories, this is not necessarily so": it is not that one view is right and all the others wrong, but rather that correct views may be as numerous as the different purposes that can be set before us.

For the purpose of dealing with the dangers of Proof,—including thereunder all dangers to which a thesis, or asserted judgment, is liable,—the most important fact about propositions seems to be the power which they give us (when their truth is believed) of passing from the known to the unknown. There are two distinct ways in which they do this, one of which may be called 'implication,'² and the other 'material indication'; the former being the case where by merely analysing the *meaning* of a name or proposition we either arrive at or guarantee certain of its less obvious consequences; while 'indication' (in general) includes this case and also the commoner one where we obtain the same power, not by mere analysis of the meaning, but by viewing one fact as material evidence for another,—evidence asserted as strong enough to stand against all hostile criticism. The proposition 'man is fallible' might be an instance of either of these modes of indication, according as the notion 'fallibility' did or did not enter into the special meaning postulated for the name 'man'. If we pass to new knowledge³ by analysing the old, we do not

¹ *Symbolic Logic*, chap. i.

² Cf. Mr. H. MacColl, in *MIND*, No. XVII., p. 45. The chief point where I differ from the view there set out seems to be in holding that 'implication,' both in its ordinary sense and as interpreted by Mr. MacColl, requires a too nominalistic view of the import of the proposition. Again, while 'indicates' is forced enough, when applied to the singular (or concrete) proposition, 'implies' seems a word quite impossible to stretch so far. Also, I think the proposition 'if he is a man, he is mortal,' different from 'man is mortal' (*ibid.*, p. 52), since the former need not (formally) apply to more men than one. But in other respects I follow Mr. MacColl very closely, and am much indebted to him.

³ The question whether, by analysis merely, we can 'increase our knowledge' is as ambiguous as the question whether by digestion we can

reach a new theory, but the application of an old one : while the attempt to prove by way of implication is, of course, either to argue in a circle or to appeal *ad hominem* : material indication is the sole means either of really passing from unknown to 'theorised,' or from theorised to known, —so far as knowledge is capable of being guaranteed.

If we elect to consider propositions solely as regards their function of end or means in the practical process of Proof, three chief consequences follow :—

First, we are free from that main difficulty surrounding the question what exactly is a *Judgment* ; the difficulty namely that all judgments must be supposed rangeable on a scale of completeness or finish, the ends of which scale are not satisfactorily marked out.

Secondly, the distinction between Real and Unreal propositions rises into considerable importance ; the latter name being here used to express all kinds of apparent proposition (*i.e.*, of sentences, containing nominative case and verb) which are incapable of Proof or Disproof.

And thirdly, we are under strong temptations to adopt that view of the import of propositions which consists in holding, not that 'something' is spoken of, and a predication made about it, but that two 'things' (in a sense to be presently explained) are spoken of, and a relation of some kind asserted or denied to exist between them.

Taking these three points in order, we may dismiss the first and second with merely a few words of explanation. It needs no lengthy process to show that any judgment, to be capable of being made a thesis for Proof, must be at least so far finished as to be expressible in the form of a proposition ; and on the other hand that although inquiry into its justification can in one sense never be completely ended, yet a stage may come, in the history of any reasoned belief, when instead of confessing reluctantly that only 'practical certainty' is achieved, we more fairly express the facts by boldly claiming that none but 'theoretical doubts' can any longer exist. At any rate, rightly or wrongly, assertions are sometimes allowed to pass for true ; and a judgment is a thesis, only when capable of expression in intelligible language and while the need for Proof is felt.

Next, the name 'unreal' as here applied to propositions is somewhat wider than what is usually meant by 'verbal'.

'increase' the food we swallow. We get a new, and firmer, grasp of old material. Though we may of course add to our power of applying knowledge, by analysing accepted truths, this merely points to the thoughtlessness with which we habitually bolt our axioms whole.

Usually the distinction between real and verbal is taken to correspond precisely to that between accidental and essential propositions, verbal propositions being restricted to mean such only as are tautologous. Thus 'a triangle is a three-sided figure' is commonly given as a typical example of the verbal proposition. But for our purpose we need some name to express indiscriminately all kinds of apparent assertion which are unsusceptible of Proof, and in order to avoid ambiguities I propose to call these 'unreal' rather than verbal. It is not necessary here to face the question as to the means of distinguishing in practice unreal propositions from real. Such inquiry belongs by right to the methods for detecting fallacies. But it may be well briefly to indicate the heads under which unreal propositions will be conveniently divided.

In the first place comes the familiar case, already noticed, of tautologous, essential, or analytical propositions. On these, nothing need here be said,—except that, in our view, a *definition* may be asserted as a 'real' proposition whose subject is 'the meaning (whether best, usual, or special) of the word —'.

In the second place we must certainly describe as unreal those propositions which in any manner involve a contradiction in the assertion made. Here the unreality flows from precisely the same source as in essential propositions. The question of their truth is pre-judged already in the definition of the terms employed, and hence they contain no subject-matter for Proof.

And thirdly we must include the case where, from one cause or another, any term used in a proposition fails to convey intelligible meaning. There is, so far as I am aware, no special name in use for this kind of unreal assertions as a class, although certain forms of them have (very properly) earned the name of mysteries. These too, from the nature of the case, may safely sing in presence of the robber Doubt. So far as they are consistently incomprehensible, so far the question of their truth or falsity can clearly not be raised, except in words. Their acceptance indeed, as a formula, may show a willing and tractable spirit, and they may to that extent have a value: but such acceptance differs of course from belief in being admittedly a voluntary act, and not a mere immeritorious and reluctant yielding to the brute weight of evidence. It is unnecessary here to occupy space with examples of these three familiar kinds of pseudo-proposition.

Now, as to the Import. It is on all hands admitted

that every proposition, so soon as understood, may be divided into two parts,—the Subject, or name of the ‘thing’ primarily spoken of, and the remainder of the sentence, or the words expressing the whole assertion made about such Subject. If we denote the Subject by the letter S, we may denote the remainder of the proposition by the letter J,—the judgment made about the S.

In so general a science as logic,—or since the province of logic is not yet clearly marked out, let us say in so general a science as that of Evidence or Proof—we find ourselves constantly brought up against the difficulty of obtaining words wide enough to include all that we mean. Thus though assertion always asserts ‘something’ of ‘something’ else,—though ‘everything’ may have assertions made about it,—yet it seems hardly safe to say that assertion is always about ‘things’; unsafe at least without explaining that ‘thing’ is here used in the widest possible sense. Not merely every *thing* (as commonly understood,—namely every material object) may be the S of a proposition, but literally *everything* or *anything*, that can be named at all; everything that can be spoken of, whether objective or subjective, real or imaginary, whole or part, great or small. The universe itself is a ‘thing’ in this sense, and so is every portion of it. Time and space are things in this sense, and so is the year 1882, or the point of the pen with which I write: so is the heat of to-morrow’s sun, or the justice shown in my friend’s remarks of yesterday: so is the word ‘Logic,’ or the meaning of that word, or the relation between its meaning and something else, or the character of that relation, or the fact that the character of that relation is beyond my power to state. We need some name thus to express in general, ‘anything that may be spoken about,’ and in spite of the possibly misleading associations of the word here chosen (which at first sight may seem to demand tangibility almost, or at least visibility or weight) there is really no other name that will mislead so little. If we may say ‘everything’ in one word, shall we not say ‘every thing,’ in two? At any rate such employment of the word will here be postulated in default of any other name to serve the purpose required.

Mr. Venn, in his *Symbolic Logic* (chap. i.), discusses three distinguishable views of the import of propositions—the *predication* view, the *class-inclusion and exclusion* view, and the *compartmental* view; finally adopting the latter as best suited to the purposes there aimed at, and especially to the solution of intricate artificial problems. But there is a fourth theory which, though agreeing with the compartmental view in one

of the main points in which it differs from the older doctrine—namely, in considering that every proposition has (at least) *two* subjects, each term being the name of a ‘thing spoken about’—yet seems to me to differ from it fully as much as the predication-view and the class-view differ from each other. That theory, suggested in Mill’s system,¹ stated very broadly by Mr. H. Spencer,² and more recently worked out into considerable detail by Mr. Carveth Read,³ may be described as the *relation-view* of propositions, and may be briefly explained as considering that every proposition really asserts the manner in which *two* nameable things are related to each other—*e.g.*, as resembling or differing, and to what extent; as successive or simultaneous in time, or conjoined in space, and whether invariably so, or otherwise.

It is usual in logic to divide what was above symbolised by J into (1) Copula, and (2) Predicate, and if it were possible to keep these names while avoiding ambiguity, I would gladly do so. But though ‘Copula’ might fairly be used to express ‘relation asserted,’ it seems impossible to divest the name ‘Predicate’ of its etymological associations so as to view it as really the name of another ‘thing spoken about’. We must therefore here adopt another symbol, and perhaps the letter *ℑ* is as little ambiguous as any. Under the relation-view, then, the form of proposition would be, not S copula P, but S copula *ℑ*.

The difference, other than formal, between this and the compartmental view appears to me to consist chiefly in the greater variety of assertion allowed for here. The compartmental view deals (directly) only with the relation of class inclusion and exclusion: the relation-view considers this as one possible relation amongst others. A further difference—a formal one, however—may perhaps be found in the fact that under the relation-view the unit of assertion is a single pair of related terms, while under the compartmental view there is no limit to the number of terms that may be (symbolically) combined into one proposition. The compartmental logic provides “a place and a notation for the various combinations which arise from considering three, four or more classes,” and it is easy to see therefore that so far as the purpose for which logic is required is that of unravelling complicated class-relations deductively, nothing

¹ Namely in his use of the relations of co-existence, sequence, causation, and resemblance.

² *Principles of Psychology*, Part VI., chap. viii.

³ *Essay on the Theory of Logic*.

could be better adapted to such purpose than the view thus named and utilised in the work above referred to. But as Mr. Venn, in more than one place,¹ is careful to notice, these developments of logic are more interesting on the theoretical than on the practical side. As he points out "it is very seldom that intricate logical calculations are practically forced upon us; it is rather we who look about for complicated examples in order to illustrate our rules and methods". What logic as a practical science is chiefly occupied with is the determination, when any Thesis and any Reason are before us, of the further assertion (if any) required to stop all gaps in conclusive reasoning. And for this purpose, the compartmental view will, I think, only help us so far as expressing descriptively the single, though important, relation called by Mr. Carveth Read "essential co-existence," and more familiarly known as class-inclusion. Of the three theories discussed by Mr. Venn, there can be little doubt that the one which, as he says, has been determined by the ordinary needs of mankind, is on the whole the best adapted for practical purposes.

It was said above, that, with the view of forwarding the practical side of the science, we are under strong temptations to adopt the relation-view of propositions. But it must not be supposed that we need therefore discard the traditional doctrine as erroneous. More fully, what was meant is that if we wish to classify propositions for purposes of Proof, simplification as far as possible becomes in the highest degree important. Instead, for example, of having two sorts of propositions, categorical and hypothetical, in only one of which the names S and P are employed, while in the other we have to speak of antecedent and consequent; and instead of accordingly having two sorts of syllogisms, with separate sets of rules, S and $\mathcal{S}$ will apply to all propositions, whatever their grammatical form, and the syllogistic process becomes a single one. Again, under the predication-view, the Predicate in propositions asserting causation can hardly help becoming exceedingly unwieldy, and the central point of the assertion is often rendered obscure. Take such propositions as 'the sudden thaw was the cause of the flood,' or 'where the carcase is, there will the eagles be gathered together,' and ask what the predication view makes of them. In all propositions where causal sequence is referred to, the obvious primary meaning is that two 'things' (usually events, but sometimes objects or qualities) are somehow connected, and

¹ *E.g.*, *Introd.*, p. xviii : also chap. v., p. 119.

not that one thing (the S) deserves to have a certain complicated assertion made about it.

It must be added, however—what remains in fact as the best practical excuse for the predication-view—that often one of the ‘things spoken of’ is more *directly* spoken of than the other. One of them forms the *datum*, or starting point for the assertion, while the other forms its goal. Thus S may denote an observed or known event, and $\mathfrak{S}$ its supposed cause or effect; as in ‘this death points to foul play,’ or ‘the war will disturb all prices’: or S may be the name of something quite familiar, and $\mathfrak{S}$ one of its less obvious causes, consequences, or concomitants, or less familiar names; as in ‘tubercle is due to organic germs,’ or ‘strikes are ruinous to the country,’ or ‘gold has specific gravity 19.34,’ or ‘whales are mammals’. Although in short every relation is, strictly speaking, two-sided, not every assertion intends to concern itself equally about both its possible aspects. If S ‘resembles’ $\mathfrak{S}$, for example, it certainly cannot be denied that the latter also resembles the former, and yet our whole concern in making the assertion may be to bring the former just within the range of what we know (or suppose to be true) of the latter; our knowledge of $\mathfrak{S}$ as regards the relation to a third term, Z, being in some way better established than our knowledge of S. Again, if S ‘indicates’ $\mathfrak{S}$, the latter ‘is indicated by’ the former; but the main purpose of indication is, of course, to point from sign to thing signified. The former is the *datum*, the latter the goal.

The relations that may exist between S and $\mathfrak{S}$, as thus understood, are of course extremely numerous. That is to say, we can, if for any purpose it be desirable, distinguish an endless number of them. S may, for instance, be the father of $\mathfrak{S}$, or his mother, child, wife, &c., or larger than $\mathfrak{S}$, or less ambitious, or may live next door to $\mathfrak{S}$, or may be related to him, or her, or it, in a million different ways. For our purposes, however, it will fortunately be sufficient to make only the broadest subdivision.

Main Kinds of Thesis.

The most important distinction among kinds of real assertion is undoubtedly that between Positive Assertion—otherwise called ‘affirmation,’ and bare Denial. Certain propositions, instead of committing the assertor to any definite statement of the relation between S and $\mathfrak{S}$, are content to say merely that some definite assertion, taken as

already made about them, is untrue. These will be called denials: all others will be called positive assertions, or 'affirmations'.

It is a matter of some difficulty to mention any special grammatical form as fairly representative of the denial, since even sentences containing the negative particle 'not' in close connexion with the verb, or the quantification 'no,' before a noun, or a 'negative name' as $\mathcal{S}$, are very frequently used to express a positive assertion as here defined. Thus we may say 'that is not bad,' or, 'no pen can attempt to describe the scene,' or, 'he is unskilful, worthless, disagreeable, incompetent,' &c., without at all intending to confine ourselves to bare denial of something either actually or only presumably said before. The grammatical form of the proposition, though often useful as a hint towards the meaning in this respect is at best an uncertain guide; nor can even the whole context be taken as in every case complete evidence of the real intention.

The two distinct intentions do however exist, and are to some extent inferrible from the words employed. Where the intention is doubtful there is nothing to fall back upon except an express declaration by the speaker as to the sense in which the proposition is put forward. At present however we are not concerned with the means of arriving at the intention, but only with classifying those distinguishable meanings which have importance for the doctrine of Proof. Of these the most important is the distinction between positive assertion and bare denial. And we may now proceed at once to examine more in detail the manner in which this distinction runs across the others.

Next in importance is the opposition between Law and Fact asserted; or as it may be otherwise called, between abstract and concrete propositions. The most general of all relations, asserted or denied, is that which for want of a better name, may in the meantime be called 'Indication' or 'Essentiality'. The copula 'indicates,' as here understood, includes the copula 'is' (as in ' S is P '), stretching however beyond the usual interpretation of the latter. By calling this the most general relation it is meant that, with the one doubtful exception of the purely quantitative relations (the laws of which are amply developed in mathematics and require notice only in a more comprehensive scheme than can here be attempted), every proposition may be viewed as saying that one thing indicates, or does not indicate, a certain other.

The apparent rashness of this statement will serve at least

to show where the difficulty lies. Some word is wanted for the purpose of generalising, in one expression, several kinds of assertion which are commonly described by different names; no word appears better suited for the purpose than 'indicates,' and yet even this would certainly not be sufficient without some explanation. By means of a symbol indeed, it would be possible to avoid ambiguity, but since the symbol must have a name, we could not altogether escape the use of language, and could only strive, while using it, to avoid any misleading associations.

The chief difficulty really consists in stretching the name 'indication' to cover both abstract and concrete propositions. It is easy enough to see how every *Law* asserted may be viewed as an indication, since the primary purpose of every law is, of course, to be interpreted or applied: hence the S of every abstract proposition is expressed either directly as a 'general name' (simple or complex), or else—and especially where it is a proposition—is generalised by means of an 'if' or 'where' or 'when,' &c. But when we come to speak of concrete propositions the word 'indicates' draws us into clumsiness of expression at once. This case of death, no doubt, may indicate (or point to) poison, or my pulse at the present moment may indicate (or show) the absence of fever, or yesterday's panic in the city may indicate (or foreshadow) a future crop of bankruptcies; but it is undoubtedly clumsy to say that our enemy 'indicates the qualities of' a fool: we habitually condense these four words into the one word 'is'.

Nevertheless, with this apology, I propose to use the name 'indicates' in default of a better to fit all cases. Much of the difficulty may be removed by remembering that it is only in abstract propositions that S is really a sign, in the ordinary sense of the term: it is only there, at least, that it is intended to be *used* as a sign, or mark, or label, bearing a recognised meaning. The essential characteristic of concrete propositions is that their S cannot be said, *in general*, to indicate the S, but only by virtue of all the special circumstances bound up along with it. It may indeed be on general grounds only that we in fact believe this or that concrete proposition—as, that the panic will produce a crop of failures: but this does not appear in the statement. In the concrete proposition we distinctly assert the possession of something over and above mere general grounds, namely a full review of all the special circumstances. In spite of any hidden facts, we assert our judgment as deserving of belief.

The relations, then, which are thus to be included under the name of 'indication' are those of *Dependence*¹ (whether causal or logical) and of *Classification*. By an assertion of causal Dependence is meant an assertion that two 'things'—usually events but sometimes objects or qualities—are causally connected so that one of them is to some extent an indication of the other, whether a sign in the strict sense, or merely a symptom. Some things in nature are found or supposed to be marks or signs of others, as a falling barometer indicates a coming storm, or as breathing indicates that life is not extinct, or as every existing human being indicates the prior existence of a pair of human parents. By an assertion of logical Dependence is meant an assertion that the truth of one proposition follows from that of another, or that the meaning of one name is included in that of another. Most names and propositions are intended to bear a meaning—that is, to mark or signify notions or facts—and some propositions are intentionally put forward as guaranteeing the truth of others. Thus the name 'Intolerance' may be intended to include the notion 'active hostility'; or the assertion 'he is coming' the fact 'he is not here'; or again the assertion 'he is a man' may be employed to guarantee the truth of the assertion 'he is fallible'. By an assertion of Classification is meant the extremely frequent case where a 'thing' is said to deserve a certain name, or to bear 'essential resemblance' to another thing, or to belong to a certain class, or to possess a certain quality, or to have another thing 'co-existing' with it; as in 'gold is an elementary substance' or 'belongs to the class elements,' or 'the state essentially resembles a family,' or 'every rose has its thorn'.

The word 'indicates' being used, then, in this extended meaning, the assertion that one 'thing' (S) indicates, or does not indicate, another (Z), is sometimes made generally (i.e., 'universally' or wherever such S may be found or occur)—as in 'all men are fallible,' or 'death when accompanied by certain symptoms always points to arsenic,' and sometimes of a particular case alone, as in, 'this man has made a mistake,' or 'this death is due to arsenic'. The former kind of proposition will be here called *abstract*, the latter *concrete*.

The abstract proposition may be expressed indifferently in any one of a number of various grammatical forms, perhaps the commonest of which are those familiar types (denoted

¹ Cf. Wundt, *Logik*, pp. 179-186, 277, 281, &c.

under the traditional scheme by the letters *A* and *E*) whose *S* is the name of the members of a class, 'all' or 'none' of whom 'are' *P*. Thus 'all men are fallible,' or 'no men are secure against fallacy' are simple, straightforward examples of the assertive abstract proposition. In both cases the attribute 'humanity,' wherever found, is said to indicate the attribute 'liability' to error'. Another common form which the abstract proposition takes is where the *S* consists of what is sometimes loosely called an abstract name, as 'honesty' or 'theft'. Thus we might assert that 'honesty is the best policy,' or that 'theft cannot prosper long'; meaning, in the two cases respectively, something rather more clumsily expressible as that honest actions, in general, 'indicate' success as likely to follow, and that dishonest actions, in general, 'indicate' that (in spite, it may be, of temporary success) ultimate failure is probable. Of course these and similar sentences may contain other meanings also—may even be used ironically—but in so far as they are used to express the meaning here spoken of, to that extent they are what we here call assertive (or affirmative) abstract propositions. Again the adverbs 'always' and 'never' are very largely used to express the copula of assertive abstract indication, as in 'bread always falls upon the buttered side,' or 'a story never loses by re-telling'. And again another still commoner grammatical form in use is the conditional or hypothetical sentence, beginning with 'if' or 'when' or 'where' or 'while,' etc., as in 'if it rains in Ceylon it pours,' or 'when poverty comes in at the door, love flies out of the window,' or 'where there is smoke there is fire,' or 'while there is life there is hope': in each of these cases the purpose of the proposition may be to assert of one 'thing' that it universally indicates another, whether in the past, present or future relatively to itself. We need not follow these grammatical variations into further detail: enough has been said to illustrate them for the purpose required.

The concrete proposition on the other hand contents itself with a less apparently sweeping assertion. It says, not that *S*, wherever found, indicates *S*, but that in this particular instance it does so. Looking at all the circumstances, the present dearness of money indicates a coming panic, the circumstances of this man's death point to some kind of poison, the latest political movement indicates dissension in the cabinet, or deserves the name of revolutionary or reactive, or whatever else it may be. The difference is perhaps best expressible by saying that while in the abstract assertion *S* is spoken of (but by no means really *conceived*)

apart from any surrounding circumstances which may serve to individualise it, in the concrete assertion the reverse is the case: we here say that *taking all special circumstances into account* this S indicates $\mathfrak{S}$.

Corresponding to abstract assertions there are abstract Denials; and of these, two kinds may be distinguished. Sometimes we deny a law by asserting that there are exceptions to it, sometimes (*e.g.*, frequently in classifying or name-giving propositions) by asserting that it totally fails; or in other words, that 'some difference exists between S and $\mathfrak{S}$ '. The former kind of denial may be called *exceptive*; the latter an *assertion of difference*.

As to the exceptive denials, perhaps the most frequent grammatical form which these take is that known under the traditional arrangement as the particular proposition¹: *e.g.*, 'some negroes are fairly intelligent' or 'some Mexicans are not habitual liars'. Again the adverb 'sometimes' or 'sometimes not' is frequently used in exceptive denials; and again the expressions ' $\mathfrak{S}$ is quite compatible with S' or 'S is by no means necessarily $\mathfrak{S}$ '; and again the expression 'all . . . are not,' as in 'all that glitters is not gold'; and various other forms, such as, for example 'there are lawyers *and* lawyers'. Here also no form of words is by itself perfectly unambiguous: we often need something else to show whether the proposition is really intended as assertive or as a bare denial. But on the whole and roughly, the particular proposition may be taken as most nearly typical of this class. No fruitful distribution of any proposition into its component parts, it must be remembered, can ever be made until the real intention of the speaker is clear.

As to 'assertions of difference' here, as the name chosen may help to show, there is some difficulty in placing them quite clearly in the class of mere denials. The justification for doing so lies however in the fact that without some supposed belief that, for the purpose in hand, no difference

¹ Cf. *Symbolic Logic*, chap. vii, p. 161: "It can extinguish no class, and establish no class, and has therefore no categorical information to give the world." The particular proposition, as actually employed, no doubt serves several other purposes also, notably that of registering our first vague grounds of *Inference* as contrasted with anything deserving the name of grounds of *Proof*. Finding two 'things' frequently or even occasionally conjoined, we often begin to get upon the track of some law, and eventually we may rise thereby to the power of making and perhaps proving, some abstract assertion regarding them. But regarded as positive assertion, this is too vague to be called a 'thesis'.

exists (*i.e.*, that S 'indicates' $\mathcal{S}$) the assertion of difference is too trivial to have any practical value, since points of difference may always be found between two 'things' however nearly alike. Hence the essential purpose of these assertions is to *contradict* something already supposed to be believed. The sole practical use of the assertion of difference is either to break down a supposed analogy or to deny the applicability of a name, *i.e.*, the right of a thing to belong to a certain class; and this whether the proposition be abstract or concrete. Thus we might say 'national government is a different thing from family government' (abstract), or 'whales are not fishes' (abstract), or 'the Kilmainham arrangement was not a compact' (concrete), or 'the case of Mr. A. is different from that of Mr. B.' (concrete). These propositions merely say that S *differs from* $\mathcal{S}$. For further examples of this form of denial we may take such expressions as 'seeing is a different thing from believing,' or 'liberty is one thing and licence quite another,' or even perhaps 'force is no remedy'—though this last phrase has no doubt been more often used to express a vague law that 'force indicates probable continuance of the evil' than merely to deny an assertion to the contrary, or to correct the use of a name. As this last example may serve to show, there is sometimes a difficulty in deciding whether a given sentence is really an assertion that S indicates the absence of something (as ice, for instance, indicates the absence of a certain degree of heat), or a mere assertion of difference between S and $\mathcal{S}$. But this is a difficulty which cannot be remedied by simply refusing to notice it. The possibility of misunderstanding the real intention of a given set of words, is one that can hardly too often be brought to mind.

Corresponding to concrete assertions there are concrete denials; and of these again two kinds. We have just spoken of the concrete assertion of difference, and, after what has been said of assertions of difference in general, the nature of the first kind of concrete denials will be sufficiently clear. Nor is there much difficulty as to the other kind. It follows from the nature of concrete assertion that these cannot be at all described as exceptive—since there is no law to which they directly take exception. Perhaps the best name for them is 'Simple denials'. These also are found in various grammatical forms, but the commonest is, no doubt, where 'not' is added to the verb, as in 'this was not due to drink,' 'the crisis will not be followed by any important change,' 'it is not accompanied by much

danger after all,' etc. Also in this sense a negative name as *S* may be sometimes used, though perhaps rarely. Thus in saying 'the door is unfastened,' we might conceivably intend merely to deny the opposite assertion, but more probably the intention would be to convey a positive assertion of our own. When the distinction that has here been drawn between concrete and abstract propositions is clearly kept in view, it becomes sufficiently easy to recognise the simple concrete denial.

The abstract proposition is, then, the assertion or denial of any general law in nature, of however narrow sweep or insecure stability: the concrete proposition is the assertion or denial of a single fact. The concrete proposition takes a concrete *S*—'this man,' 'these instances,' 'my lecture yesterday,' 'your hope of success,' and tells us what these 'indicate' forwards in time, or backwards or contemporaneously. And here must be noticed an objection which may possibly be raised at first sight to this use of the word 'concrete'. A man it may be said is clearly concrete enough, and so perhaps is an instance; but a lecture—is not that dangerously near the abstract, and 'hope,' 'success,' are not these purely abstract terms? The answer is that no word (when used in a proposition—and it is only when so used that we are here concerned with them) is in itself either abstract or concrete, but its context makes it so. Any word may be either, according to the purposes of our assertion. We may speak of man or of men in the abstract, in spite of the solid flesh belonging to each individual; and on the other hand, by hedging in a so-called 'abstract name' with the help of a demonstrative pronoun, or in whatever way the resources of language will allow us to apply such name to some actual concrete case, we destroy for the time its abstract nature, and the proposition as a whole becomes concrete. If I make an assertion regarding the 'truth' of some particular story, I state no law, and deny no law, but confine my remarks to one particular concrete fact. The underlying meaning of 'abstract' is always 'detached from special circumstances' or 'generalised,' and so long ago as Berkeley's time, our limitations in *conceiving* anything in the abstract have been clearly shown. We cannot conceive things in the abstract, but we can make abstract assertions regarding them—can sometimes say, that is, how they will behave, or how they should be explained, or designated, under all circumstances indifferently; and where we speak of *this* man, *your* hope, etc., we include special circumstances which 'man' and 'hope' by themselves would lack.

Whether or not 'hope' in the abstract may tell flattering tales habitually, we say that taking all the present circumstances into account it does so here. The *S* of a concrete proposition differs from that of the corresponding abstract one in being saddled with all the individual peculiarities of the given case. And on this account the concrete assertion differs from the abstract one in being less easy either to prove or disprove, since surrounding circumstances are nearly always wide enough to contain something that even science fails to reckon.

It is evident also that, so long as the meaning is clear, the grammatical form of the sentence—categorical or hypothetical, simple or complex, *A* or *E*, etc., is not of the slightest importance as regards this distinction. The proposition, for instance, 'murder will out' is for purposes of Proof the same whether expressed in this fashion or in the shape 'all murders are eventually discovered,' or 'no murders remain undiscovered,' or 'murder always comes to light,' or 'murders never remain hidden,' or 'when (or if) murder is committed, detection is sure to follow,' or in whatever way it may suggest itself to rhetorical ingenuity to clothe the same meaning. At the root of all abstract propositions lies the formula '*S* (universally) indicates *ℒ*'; and this whether *ℒ* be past, present, or future relatively to *S*, and whether the name of either be positive or negative. In each case *S* (in general) is said to be a sign or mark of *ℒ*, whether in the past, present, or future relatively to itself. Where *S* is found, *ℒ* (it is asserted) may be looked for.

Abstract propositions play an important part in proof—whether proof of other abstract propositions or of concrete ones. They summarise, in a compact and convenient form, whatever general knowledge of nature we have already obtained, and serve as tests to which to bring any new assertion propounded for proof. The establishment of these is of course the centre of interest for science. It is through the existence of such 'dependences' that all explanation and prediction become possible, and our consistent recognition of them constitutes the main difference between our conception of nature as a network of uniformities, and the earlier notion, so inevitable to savages, of a world governed by caprice or luck.

Concrete propositions on the other hand, although constituting in one sense the foundation for science, find their main interest, as subject-matter for proof, in a less exalted region. Although in common life also the truth of general laws (more or less vague perhaps in their statement) may to

no small extent be debated, yet the bulk of the questions arising there for settlement are of a concrete character; and, roughly speaking, the commoner the life the more relatively frequent are the concrete assertions put forward. Whether this or that thing, person, or definite group, did act in such and such a manner, or does possess such and such qualities, whether this or that individual action, event, or 'accident,' was due to such and such causes, or will have such and such results; these are the most frequent questions about which in daily life doubt arises, and which press for settlement and proof. Every one of these is concrete,—an assertion directly regarding individual fact, not general law,—and as such is marked off by a chasm as wide as any that can be made in logic, from the propositions above defined as abstract. Between concrete and abstract knowledge, however, in respect of their attainment and growth, there has been mutual aid and mutual criticism so far back as can be traced at all. No doubt, in one sense, concrete knowledge (or something separated from knowledge only by imperceptible degrees) is earlier in time, just as common life is earlier than science. But in both there are now innumerable shades of development or completeness. It may be safe to say perhaps that from concrete sensations the first predisposition for abstract knowledge arose, and that on crude concrete perceptions, aided by such predisposition, the first crude abstract guesses were formed. But the history of knowledge, from the earliest evidence attainable, is a record of the alternate and mutual production, correction, and illumination, of one kind of judgment by the other. Whatever may be true of the earliest concrete assertions, at the present time every concrete assertion put forward as a thesis carries with it a remote and indirect reference to numerous 'laws' assumed. It professes, by implication, the knowledge not only of a law but of conflicting laws, by means of which the special circumstances can be allowed for and a total balance struck. Thus the concrete proposition, when so far developed as to become a thesis for Proof, is always rich in overtones. The abstract proposition also, certainly, professes an acquaintance with concrete facts, but not quite in the same manner as the concrete proposition professes a knowledge of the laws of nature as bearing on the special circumstances of the case under consideration; for, since the abstract proposition expressly avoids saying anything about special circumstances, the assertion made is almost infinitely simpler. Practically of course the overtones in a concrete assertion are largely overlooked, but it is

their existence which constitutes the chief weakness of unaided common sense. What seems to common sense more indisputable than that this given action is a case of 'firmness' or 'strength of character' or 'courage'? Perhaps a deeper insight would show that among the special circumstances must be included ignorance of conflicting claims, or ignorance of danger.

There still remains to be noticed that very common form of proposition, which, when two concrete things are already *given* as having occurred or as existing, successively or simultaneously, asserts causal connexion between them. When we say for instance, 'your hasty speech was the cause of all the disturbance,' or 'it is this pillar that supports the building,' is the assertion properly abstract, as implying some *law*, or concrete inasmuch as it speaks directly and expressly of individual facts? Such propositions, I hold, may be used for either purpose, or for both together. It is difficult to say for which they are most often applied, or even which is most often their primary meaning. On the whole one would be perhaps inclined to call their concrete meaning primary, and to say that the abstract meaning was rather insinuated or implied than directly intended as an assertion. But in practice it will be found that these assertions are largely used for apparently confirming, by means of facts experienced, causal laws already more than half believed. And since the abstract meaning has a wider importance, and since moreover if an assertion be true in the concrete there must also be some true abstract assertion behind it, it seems best to view these as capable of both a concrete and an abstract meaning, the disproof of either of which would disprove both. For convenience, then, we may speak of them as abstract-concrete propositions, if it be clearly understood that they form no new distinction in kinds of meaning, nor interfere with the division already made (of meanings, not of forms of words) into abstract and concrete.¹

Succession and Co-existence.

There are not many minor distinctions of meaning in propositions, that call for notice here. It seems necessary, however, to mention briefly the distinction between propositions asserting Succession (whether backwards or forwards in time) and those asserting Co-existence; or, as they are more commonly called, assertions regarding causation or causal sequence, and assertions which merely *name*, or classify,

¹ See Note *, p. 39.

the S, or which state some of its constant concomitants without necessarily attempting to trace them to a parent cause. Such importance as the distinction has, for us, flows from the fact that according to the nature of the assertion in this respect is to some extent its liability to special dangers.

Wherever indication is asserted, whether in abstract or concrete propositions, all importance turns of course on the degree of trustworthiness of the sign¹: some signs being more certain than others, but even a vague symptom being better than none at all. And according as the assertion points backwards or forwards in time (S a sequent of $\mathfrak{S}$, as in 'valleys indicate prior denudation'; or S an antecedent of $\mathfrak{S}$, as in 'Deficient education indicates future increase of crime') is it to some extent open to special and different dangers: propositions pointing backwards being liable to the danger of overlooking 'plurality' of causes; and propositions pointing forwards, to that of overlooking the liability of one cause to be counteracted by another.

Thus, to take first abstract assertions, it is seldom we can say that any given S invariably indicates the past existence of any given $\mathfrak{S}$ —unless indeed the $\mathfrak{S}$ employed be so vaguely defined as to be of very little practical service. Every event (S) we may, no doubt, assert (within the widest empirical limits) indicates the past occurrence of *some other event*, the

¹ We must here use 'sign' in an extended meaning also to correspond to 'indication': so as to say that in *every* proposition, abstract or concrete, S is the 'sign' and $\mathfrak{S}$ the thing signified or 'signification'.

* (From p. 38.) We thus get six main kinds of Real Proposition:—

Abstract	—	Assertion	(1) Abstract Assertion (or indication). [S, in general, indicates $\mathfrak{S}$.] <i>E.g.</i> , 'children never think of others'.	
			Denial	(2) Exceptive abstract Denial. [S fails as a general indication of $\mathfrak{S}$.] <i>E.g.</i> , 'some children are unselfish'.
				(3) Abstract assertion of Difference. [S differs from $\mathfrak{S}$.] <i>E.g.</i> , 'whales are not fishes'.
Concrete	—	Assertion	(4) Concrete Assertion (or indication). [This S 'indicates' $\mathfrak{S}$.] <i>E.g.</i> , 'this was due to carelessness'.	
			Denial	(5) Simple Concrete Denial. [This S fails to 'indicate' $\mathfrak{S}$.] <i>E.g.</i> , 'this was not due to carelessness'.
				(6) Concrete assertion of Difference. [This S differs from $\mathfrak{S}$.] <i>E.g.</i> , 'John and William are not alike'.

essential part of which recurring S will recur : true, but we do not often find this doubted. The point of practical importance is *what* prior events does S indicate. Or, again, every existing human being has certainly had (*i.e.*, indicates the prior existence of) a human grandfather : this also is too axiomatic to convey practical information, though we may want to know the name or the special characteristics of the grandfather in question. Almost but not quite equally rare is it to find complete invariability of sequence asserted (except thus vaguely) when the reference is forward in time. A shot through the heart or brain is perhaps invariably followed by death, and if there were interval enough between the two events we should say the former indicates the latter as sure to happen : but favourable seed-time does not necessarily indicate abundant harvest, since in the interval some unforeseen counteraction may arise, or at the seed-time itself along with certain favourable conditions there may have been an unsuspected enemy sowing tares. So, again, we may often predict too vaguely to be of much real service. Sunshine, we know, for instance, always follows rain, and may be expected sooner or later, but what we most want to know is *when* to hope for it, or under what exact conditions ; if within our power to compass.

Accordingly, abstract assertions of succession are commonly made with a large margin for the unforeseen. We feel fairly contented in obtaining any hint of 'law'—any knowledge, that is, which may form a basis for even imperfectly secure inference and proof. The only alternative to 'Chance'¹ is often 'Tendency,' and in our gladness to escape from Chance we dignify this as 'Law'. An abstract assertion pointing backwards has, then, to deduct from the trustworthiness of its asserted indication in order to allow for the possibility of other causes producing the same effect ; and this even where we possess a real 'Causal Law'. It is a real law for example that a certain dose of a certain poison (barring antidotes) invariably causes death. But still we are very far from being able to say that death wherever found indicates the past presence of this particular poison. And in like manner every abstract assertion pointing forwards in time has, almost in proportion to its definiteness

¹ By 'Chance' is meant in this connexion no more than the 'contradictory opposite to 'known law'. Some law there is (now-a-days) always assumed to be, but that the conjunction is due to 'Chance,' means really that no amount of limitation of S or of $\mathfrak{S}$ will give us a known law between the two things so designated.

and consequent practical value, to allow for possible antidotes or counteraction.

In abstract assertions of co-existence we can attain much greater certainty of indication, but even here large use is made gratefully of incomplete laws—indications only roughly trustworthy, true only on unexpressed conditions. We may know for instance that boys 'as a rule' are mischievous, and may make real use of the knowledge, without being at all able to generalise the exceptions so as to state a quite invariable law. If we could truly say, *e.g.*, 'all boys except those who are physically deformed are mischievous,' our indication would be of far greater value than while we can only say 'the majority' or 'all but comparatively few' or any other vague limitation.

In the concrete proposition, on the other hand, (except as will be presently seen, in the case where S is said to *deserve the name S*), there can be no talk of the assertion being roughly true. The given S was either as a fact preceded by S or not; S either will or will not be among its consequents in time. Here accordingly it becomes still more important to recognise the 'plurality' of causes and their liability to counteraction; and hence the purpose of distinguishing the two kinds of assertion, namely those with a backward and those with a forward reference—assertions explanatory or detective, and those which predict. As regards the descriptive or classifying proposition (where S is said to deserve the name of S), here a little more latitude seems inevitable. Names are altogether so loosely applied—their correct meaning varies habitually within such wide limits—that, in giving S a name not already assumed to belong to it of right, we may well be content, in many cases, to come somewhere near the mark. Is this man civilised, intelligent, learned, unsteady, idle, brave? Even when we judge his character accurately in *fact*, very many of such questions might admit of the double answer, Yes and No.

As, then, in the case of explanatory or detective propositions the main difficulty flows from the 'plurality' of causes, and in predictive propositions from the liability of one cause to be 'counteracted' by others; so in propositions of co-existence the danger is that of taking for essential something that is accidental merely—*i.e.* of believing 'always' when the real truth is 'sometimes'. For if the proposition be concrete (as 'this man is a fool') it still professes abstract knowledge—knowledge of the essential qualities which go to form the meaning of the predicate in question.¹

¹ See Note *, p. 42.

The Law of Counter-indication.

As the presence of one thing may indicate the presence of another, so may presence indicate absence, or absence indicate presence, or absence indicate absence. All these are of course equally assertions of indication. Thus a negro's coloured skin may be asserted to indicate the presence of a cheerful temperament, or the absence of certain other qualities; and the absence of pain, in certain cases, to indicate the presence of paralysis or the absence of inflammation.

On any view of logic, the real *pons asinorum* is the group of facts here to be generalised under the one 'Law of Counter-indication'.¹ This law may be said to lie directly at the root of the ordinary doctrines of Conversion and Contraposition, of Hypothetical Inference and Proof, and consequently of the first and second figures of the Syllogism; and in a less direct manner its importance is traceable throughout. Difficult though it is to state the law in perspicuous language, and intricate though some of,

¹ Mr MacColl, who formulates essentially the same law (*loc. cit.* p. 54) adopts for it the name of 'Contraposition'. But Contraposition, in its usual meaning seems never to have had quite so wide an application, and therefore I think 'Counter-indication' less ambiguous.

(From p. 41.) Putting the results of this section into a table we get:—

Real Propositions (Whether abstract or concrete, assertive or negative; the symbol — covering both assertion and denial of indication.)		
Of Succession		Of Co-existence
Explanatory and Detective	Predictive	Descriptive, Classifying, and Connecting
(S—past $\S$)	(S—future $\S$)	(S—present $\S$)
[E.g., 'Valleys are due to prior denudation'. 'This mark was not caused by ice.']	[E.g., 'Deficient education fav- ours crime'. 'This law will not pacify Ire- land.']	[E.g., 'Gold is an elementary sub- stance'. 'Business qualities and the sanguine temperament go together.' 'This man is busy.' 'Whales are not fishes.' 'This is not my hat.']

And from this table, combined with the former one, and with the further cross-division resulting from 'laws only roughly true,' a full table of the questions arising for Proof may now be readily drawn up.

its consequences may be, the law itself is really extremely simple, and once grasped can hardly be forgotten afterwards. It needs, however, some special definition in order to overcome in the first place the difficulties of statement.

The language used in the first paragraph of this section is, until further explained, hardly general enough to express all that is intended, and is only chosen because no other names, more comprehensive than 'presence' and 'absence,' appear to be available. The presence or the existence of a thing or quality, the happening of an event, the truth of an assertion, stand on one side of the opposition intended, as contrasted with the absence or the non-existence of a thing or quality, the non-happening of an event, the untruth of an assertion. And, for brevity and convenience merely, I wish for present purposes to extend the use of the two terms chosen, in order to cover these diverse meanings. Accordingly such assertions as that 'human beings indicate human parents,' or that 'the existence of discontent in India indicates bad government,' or that 'the falling of a stone indicates the force of gravity,' or 'if he is well he will certainly go,' &c., are all cases of 'presence' indicating 'presence' in the sense intended. And so with the indication of absence by presence, and of absence or presence by absence. The two words are not to be understood as strictly limited to their ordinary sense, but as stretched to include the wider meaning postulated as above for the sake of simplifying the expression.

Now since we mean by S the whole of that 'thing' which constitutes the sign or *datum*, and by $\mathfrak{S}$ the whole of that which the sign signifies, it is clear that if we employ symbols to express respectively that thing the *presence or absence* of which may indicate $\mathfrak{S}$, and that thing the presence or absence of which may be indicated by S, we cannot use S and $\mathfrak{S}$ themselves for such a purpose without incurring misinterpretations. Instead of them it would be better, where necessary, to use the corresponding small letters *s* and $\mathfrak{s}$. Thus if the presence of a steady pulse indicates absence of fever, 'steady pulse' and 'fever' are respectively *s* and $\mathfrak{s}$, 'the presence of a steady pulse' is S, and 'the absence of fever' is $\mathfrak{S}$. Finally if we call that S or $\mathfrak{S}$ which expresses the presence of *s* or $\mathfrak{s}$ a positive one; and that which expresses their 'absence' a negative one; and if we call their positiveness or negativeness their *quality*; and the change from positive to negative, or from negative to positive, a *change of quality*; the law may be stated as follows:—

All indication of $\mathfrak{S}$ by S (affirmed or denied) is expressible as

indication of S by $\mathfrak{S}$ (affirmed or denied) if, and only if, the quality of both S and $\mathfrak{S}$ be changed.

The table given below¹ expresses the results of the law concisely, but a few examples will help to make them clear.

Take first the assertion that 'every corrupt tree bringeth forth evil fruit' (*i.e.*, presence of corruption in the tree indicates ditto in the fruit), then the equivalent form of this, and the sole *indication* implied, would be 'absence of corruption in the fruit indicates absence of corruption in the tree'. What the proposition does *not* tell us, but what may perhaps be known to be true from other sources, is either that corruption in the fruit indicates corruption in the tree (*i.e.*, 'every tree that bringeth forth evil fruit is corrupt')—which, of course, would be the simple converse of the original proposition,—or that soundness in the tree indicates soundness in the fruit,—which would be the 'reciprocal'. From the original proposition we can indeed get the *denial* of any such law as that corruption in the fruit indicates soundness in the tree (*i.e.*, 'some corrupt fruit is the offspring of a corrupt tree'); but this, being a denial, is not itself a statement of indication: the sole indication is that which in the A and O propositions is usually called the contrapositive, in I and E the simple converse, and which in all propositions is here called the counter-equivalent.

Or take next the assertion that 'light-haired races are not given to revenge' (*i.e.*, light hair roughly indicates absence

¹ Thus, if we write 'non- S ' for 'negative S ' or 'absence of s ,' and the same with $\mathfrak{S}$; the sole *equivalent* of:—

(1)	S indicates $\mathfrak{S}$,	is	Non- $\mathfrak{S}$ indicates Non- S	(cf. contraposition of A)
(2)	S „ non- $\mathfrak{S}$,	„	$\mathfrak{S}$ „ Non- S	(cf. simple conversion of E)
(3)	Non- S „ $\mathfrak{S}$,	„	Non- $\mathfrak{S}$ „ S	(cf. exclusive disjunction)
(4)	Non- S „ non- $\mathfrak{S}$,	„	$\mathfrak{S}$ „ S	(cf. No. 1, above)

And the sole equivalent of:—

(5)	S fails to indicate $\mathfrak{S}$,	is	Non- $\mathfrak{S}$ fails to indicate Non- S	(cf. contraposition of O)
(6)	S „ „ non- $\mathfrak{S}$,	„	$\mathfrak{S}$ „ „ Non- S	(cf. simple conversion of I)
(7)	Non- S „ „ $\mathfrak{S}$,	„	Non- $\mathfrak{S}$ „ „ S	(cf. No. 3, above)
(8)	Non- S „ „ non- $\mathfrak{S}$,	„	$\mathfrak{S}$ „ „ S	(cf. No. 5, above)

of revengefulness). Of this the formal equivalent would be that the presence of revengefulness roughly indicates darkness of hair ('revengeful races are not light-haired'). This example serves well to bring into relief a fact which interferes largely with what may be called the *positive* utility of the law, —the fact, namely, that *s* is often a mark whose presence or absence is much easier to recognise than that of *g*. It is easier to see at a glance whether or no a man is light-haired than whether or no he is revengeful, and we should therefore more often argue from *S* to non-*S*, than from *S* to non-*S*. The chief value of the law is rather restrictive than inferential, namely to prevent our supposing the 'reciprocal' necessarily true. The readiness to accept the 'reciprocal' as equivalent is one of the strongest tendencies in human nature, and also (perhaps, indeed, this is the main explanation of the fact) one of the most fruitful as regards the earliest guesses at unknown truth: for though *S* (or non-*S*) may not exactly indicate *S* (or non-*S*), it is often so closely connected with it by causation that in finding where such indication fails we hit upon the real law. Nevertheless, in Proof as distinct from Discovery, the tendency is fatal, and needs to be held in severest check. A certain proportion of indications there are—a comparatively small proportion however¹—which do, as a fact, cut both ways; thus, no doubt, even more than roughly speaking, evil fruit indicates an evil tree. So too while a certain label on a bottle shows that it came from a certain firm we are also often told, in the same breath, that 'without it, none are genuine'; and while equilateral triangles are equiangular, equiangular triangles are equilateral. But none the less is it unsafe to generalise, as the uninstructed mind is apt to do from these occasional cases, that mutual indication is the rule, and one-sided indication the exception. Probably the prevailing attitude amongst the illogical is best expressed as the belief that any law, in the absence of proof to the contrary, involves a 'fair presumption,' at least, that the reciprocal is true; while fair presumption is not worth distinguishing from 'practical certainty': the real fact being, of course, that the most an abstract indication ever involves (and that not always) is a fair presumption that the question as to the 'reciprocal' is worth the labour of investigation. It seems unnecessary here to say more about the practical value of the law of counter-indication: it merely binds up into one scheme rules whose utility is well-known. This is the case at least as re-

¹ See Prof. Bain on 'Material Obversion,' *Logic*, i., p. 111: also Wundt, *Logik*, pp. 214, 245, 317, &c.

gards the universal affirmative and the particular negative: perhaps, however, the ease with which the exclusive disjunctive is commonly liable to be taken for the mere assertion of difference may be a less familiar fact.

Nor need we here set out examples in all the eight varieties introduced by varying the quality of S and $\mathfrak{S}$, and by the difference between assertion and denial of the indication. But it remains to ask how far the law is applicable to concrete propositions. The answer seems to be that, though formally implied, the counter-equivalent is in concrete propositions never directly needed. This is in fact the extreme case of what was noticed in the example of the light-haired races. If S be a concrete 'thing,' we have other marks, more readily applicable than non- $\mathfrak{S}$, by which to prove its absence: it is in fact known to us mainly, by means of its attendant circumstances as a whole; and $\mathfrak{S}$ is only one of these, and (by hypothesis) not the most familiar. We can, indeed, apply counter-indication to concrete matter in some such way as this: suppose the concrete proposition to be 'this murder indicates greed of gold'; if we are certain of this, and also of the fact that in a given prisoner's case the greed of gold was absent (non- $\mathfrak{S}$), we no doubt may infer that this murder was *not* (non-S) committed by him. But here of course it is not 'this murder' whose existence we get denied, but the truth of the theory that it indicates the prisoner as its cause: it seems that the result is obtained circuitously, by means of the abstract indication involved—namely, 'anyone who committed this murder must have had a greed for gold,' or 'the abstract possibility of this murder indicates such motive,' and this motive was absent in the case before us: hence, *in the case before us* 'this murder' was absent too. This is rather a highly elliptical syllogism than a case of immediate inference.

There is one further precaution to be observed in using the law—a precaution, however, which is probably too simple to require notice, except so far as symbols are employed. And perhaps the reader already recognises¹ that half the mental confusion that exists is really due to the use of symbols,—whether such symbols are imposed upon us by the real need for abbreviation (as *e.g.*, in the case of general names), or by what may appear to be the wanton pedantry of logicians. It is easy enough, for instance, to see that the proposition 'every man is an animal,' does not imply that every animal is a man, though possibly some people might be puzzled by the question if A and B were substituted for man and

¹ With Mr. Keynes, MIND XV., 366.

animal. *Latet dolus in generalibus.* But here the source of possible confusion to which I wish to draw attention is that due to the *time*-element in indications. Where propositions of co-existence are in question, no difficulty can possibly arise, but in the case of succession it may be worth while to notice that where S indicates (or fails to indicate) *future* S, non-S indicates (or fails to indicate) *past* non-S, and where S indicates (or fails to indicate) *past* S, non-S indicates (or fails to indicate) *future* non-S. Practically, where actual examples are employed, the danger is not likely to arise; but, in the absence of an express caution, there might perhaps be a tendency to suppose that 'S indicates *future* S' is equivalent to 'non-S indicates *future* non-S'; with which indication (as would be seen at once when translated into full language) it has really nothing to do.

There remains little more to be said, in this place, about the subject-matter of *Proof*, except to admit as unmistakably as possible that the view of propositions here taken, and the classification here made, is far simpler than would be required for almost any purpose other than ours. For Psychology certainly, and also for the doctrine of Inference in general (as contrasted with reflective Inference, or Proof), very much more would be needed. But in Proof we start always with some *completed* judgment, some judgment developed so far as to be expressed, reflected upon, and its validity called in question: hence the growth or formation of the judgment from its earliest traceable stages is of no direct concern to us. Many of the varieties of grammatical structure correspond roughly to shades of meaning which vary both in definiteness, in strength of assertion, and in richness of implication. These are in themselves of high importance: but before the interest in these arises, we need to keep perfectly clear the first broad distinction between proven and not-proven. For such a purpose, the plan which commends itself alike to common-sense and to logic is that of treating the proposition as something put before us in an already formed condition; put forward, that is, as conveying intelligible meaning and deserving intelligent belief. By considering it a pretender to these qualities, and then proceeding to inquire how far it actually falls short of attaining them, we best arrive at some notion of its real position on the long scale between worth and worthlessness. Keeping this end in view, we start fair to consider in detail the series of possible objections that can be brought against any thesis set up as worthy of belief.

ALFRED SIDGWICK.