

(2) But Pleasure and Pain are not only subjective, they are also said to be *passive* states: in this they differ from Attention, which is active. That Excitement is intimately connected—both causally and consequentially—with attention, there can be no doubt. But the same may be said of Pleasure and Pain. If pleasure is the accompaniment (effect) of the “effective exercise of attention” (see Dr. Ward’s article in *Encyc. Brit.*, xx. 71) and pain of the “ineffective exercise of attention,” excitement of a high degree seems often to be the accompaniment (cause or effect) of a rapid *alternation* of attention, which is such as not to produce either much pain or much pleasure. In as far as such states of excitement are *dependent* on a phase of attention—but surely *distinguishable* from attention—they seem to be purely passive phases on a level with pleasure and pain. But in as far as states of excitement seem to *determine* changes of attention, they still fulfil one of the functions of pleasure and pain.

(3) This leads us to the *relation* of Feeling to *action*. Pleasure and Pain are regarded by a school of psychologists as the sole determinants of all that may be called *psychical* action. But Excitement may also determine many actions which would not usually be regarded as irrational, though verging more or less on the irrational. Such excitement is often colourless as regards pleasure and pain, while, again, the action is pursued independently of pleasures or pains to be gained or averted. Hence, still maintaining that psychical action is always determined by Feeling, we ought under variations of Feeling to include differences in degree of Excitement as well as of Pleasure and Pain.

Whether, then, we consider the subjectivity of Feeling, or its dependence on presentation and on attention, or its influence on action, we are led to the conclusion that Feeling is a constituent of consciousness varying not only in the positive and negative direction, *viz.*, as more or less Pleasure or Pain, but also in a direction, not wholly independent of the other, *viz.*, as more or less of Excitement.

MILL'S NATURAL KINDS.

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The doctrine of Kinds, as laid down by Mill, does not seem to be tenable; but although there be no such radical and ineffaceable distinction in favour of certain classes as is conveyed by the word Kind, and by Mill’s explanation of it, yet there is, we think, a real difference between such classes and mere arbitrary classes; and the nature of that difference may be stated very nearly as Mill stated it. In point of fact there are, for all purposes of practice, classes which possess that salient peculiarity upon which Mill

lays chief stress in characterising Natural Kinds, *viz.*, that the possession of a few qualities ensures the possession of others which do not follow logically, nor, as far as we know, physically, from the first. It is not merely that in regard to a horse, or a bit of sulphur, "many general assertions are possible," as Mr. Towry (see *MIND* No. 47, pp. 434 ff.) says; but that a few assertions are sufficient to mark off the class of which these many assertions are true; while in regard to classes defined by an arbitrary choice of qualities, no general assertions are possible except those which follow from the definition. Yet, says Mr. Towry, "the one class is no whit less a merely intellectual creation than the other". That it is an intellectual creation, and not a group absolutely insulated in nature by impassable chasms, we admit; but that it is a *merely* intellectual creation, in the sense in which an arbitrary class is such, seems impossible.

The true view of the case seems to us to flow from the general doctrine of Causation. When one event invariably accompanies another event, we consider them to be connected through causation; *i.e.*, either as cause and effect or as effects of a common cause. In like manner, if all objects which possess the attributes *a* and *b* are found in nature to possess a number of other attributes in common, we cannot believe that this is a mere coincidence; we are forced to conclude either that the given attributes are accompanied by the others in virtue of a general law of causation, or that the objects have a certain community of origin.

Thus it seems to us that the fault in Mill's discussion was not that he made a distinction where none exists, but that he regarded the distinction as an ultimate fact, instead of a thing to be explained. The very terms, however, in which he drew the distinction point to the mode in which it may be explained; though, on the other hand, it must be admitted that the explanation, while it explains the chief distinction, explains away much that Mill laid down concerning it. When a certain set of qualities entails the presence of others, and the supposition cannot be entertained that there is a causal connexion of a general nature between them, the conclusion is inevitable, as we have said, that there is a *certain community of origin* among the objects possessing that set of qualities. The phrase in italics is designedly vague; for we never refer things to an absolute origin. Accordingly, the classes which are in some sense entitled to the name of Kinds, inasmuch as the objects composing them are really connected in nature by so genuine a bond as that of community of origin, are nevertheless loosely defined, and may narrow or widen, or be lost entirely, according to the direction and extent of the lines along which their origin may be imagined to be traced. While, however, this does away with the mysterious and impassable chasm between Natural Kinds, it does not seriously impair that other character—perhaps too strongly insisted upon by Mill—of the indefiniteness of the number of

common attributes; for, if we regard the invariable concomitance of certain qualities with certain other marks as proof of a common origin in the objects possessing those marks, there is no reason for setting any limit to the number of ways in which that common origin will be betrayed.

It is not meant to be implied in the foregoing, that in the case of all "Natural Kinds" community of origin has been the actual ground of classification, or even a subsequently found character. To take what seems, in some respects, the simplest possible instance, the chemical elements, there is not, within the present writers' knowledge, any external evidence that all the sodium, for example, in the universe was derived from a common stock; but it seems highly probable that either this is the case or else that all the properties of sodium are deducible by general laws from a few of them. In other words, the fact that all portions of matter which possess a few of the properties of sodium do actually possess all the other properties of sodium forces upon us the conviction that either the qualities or the objects have a real connexion with each other. If the former is the case, the properties of sodium are deductions from its molecular constitution; if the latter, then sodium is in a very valid sense a Natural Kind—something very different from an arbitrary and "merely intellectual" class: and this, whether one agrees or does not agree with the present writers in regarding the connexion between the objects to reside in a certain community of origin. In the case of the animals forming a species, it would be preposterous to suppose that all the common qualities might be explained deductively from a few of them. These, then, form a Natural Kind, in the sense in which we have used the term; and, in this case, community of origin has been sufficiently shown to be the true ground of the classification. It is a matter of course that such classes are not more but less rigidly marked off than arbitrary classes. The quality of "naturalness" is attributed to them, not in virtue of their boundaries being clearly marked out by nature, but because, however indistinct the actual boundary may turn out to be, the principle on which it is drawn points to a natural and not a merely intellectual connexion among the objects it includes.

THE AIM OF INDUCTIVE REASONING.

By JOSEPH SOLOMON.

Inductive Logic seems to me to be in a state of some confusion at the present time. There is not perhaps much to be added in the way of statement or elucidation to the general description of the processes by which natural truths, other than mere facts of observation, are attained to; but there seems still to be much