

there is a series of facts each explicable by the one following it, until a fact is reached utterly inexplicable. (Cf. Hamilton's *Reid*, Note A, § 5, II vi. et seq.)

(2) Applied also to the limiting state of an endless series of states which approach indefinitely near to the limiting state, and on the whole nearer and nearer, without necessarily ever reaching it; although the word ultimate does not imply a denial of actual attainment.

Thus, it has been held that a real object is that which will be represented in the ultimate opinion about it. This implies that a series of opinions succeed one another, and that it is hoped that they may ultimately tend more and more towards some limiting opinion, even if they do not reach and rest in a last opinion. Cf. TRUTH AND ERROR, Logical. (C.S.P.)

**Ultra-** [Lat. *ultra*, beyond]. Extreme; used in compounds, as ultra-sensational, ultra-idealism, &c. (J.M.B.)

**Ultramontanism** [Lat. *ultramontanus*, beyond the mountain]: Ger. *Ultramontanismus*; Fr. *ultramontanisme*; Ital. *ultramontanismo*. In the Roman Catholic Church, the principles and tendencies of those who aim to increase and consolidate the power of the pope, and especially to maintain his temporal power intact.

Ultramontanism is opposed to GALLICANISM (q.v.) and constitutes a centralizing tendency in the Church. The dogma of the infallibility of the pope was regarded as a triumph of the Ultramontane influence. In recent years Ultramontanism and Gallicanism have lost a large measure of their party significance and have come to stand for opposing tendencies within the Catholic Church. (A.T.O.)

**Unbelief** (religious): Ger. *Unglaube*; Fr. *incrédulité*; Ital. *miscredenza*. That attitude of mind towards religion which is not simply negative but involves positive disbelief of some of the doctrines or practices of religion.

Unbelief presupposes the positive rejection of the claims of religion, and in the minds of most religious persons is associated with a degree of moral obliquity. In the popular mind it is identified with infidelity. Cf. BELIEF (especially in theology and religion). (A.T.O.)

**Unconditional**: see ABSOLUTE, and CONDITIONED.

**Unconscious**: Ger. *unbewusst*; Fr. *inconscient*; Ital. *inconscio*, *incosciente*. (1) In general, not conscious, non-mental; not possessed of mind or consciousness.

The word is thus used, in psychology, of bodily states in or during which consciousness lapses. So James speaks of 'sleep, coma, fainting, epilepsy, and other unconscious conditions' (*Princ. of Psychol.*, i. 199).

(2) The word is sometimes used, in experimental psychology, to cover psychophysical (i.e. presumably cortical) processes which, for various reasons, lack their normal conscious correlates.

This use is not well defined; the following instances will, however, illustrate it fairly well. (a) A lecturer goes on the platform with a severe neuralgia. He 'forgets' the pain in the excitement of his topic; but the neuralgia 'returns' at the conclusion of his address (W. B. Carpenter, *Princ. of Mental Physiol.*, 1888, 6th ed., 138 f.). (b) 'All the separately imperceptible overtones of a clang contribute something . . . to the perception of the whole; and the sum of these contributions constitutes what we call clang-tint.' This 'co-operation of unnoticed components in the total effect of a connection of conscious processes' is characteristic of fusion and of attention (O. Külpe, *Outlines of Psychol.*, Eng. trans., 1895, 290 f.). (c) Fechner's experiment. Hold a tuning-fork to the ear, until the tonal sensation has entirely ceased. Remove the fork: the silence is deeper than before. Bring the fork to the ear again: a faint tone may be heard.

(3) Specifically, a postulate of the Herbartian psychology. 'Unconscious mental excitations (*seelische Erregungen*), of whose nature we are ignorant, are interposed between our conscious ideas; every conscious idea arises out of, and dies away into, such an unconscious excitation' (T. Lipps, *Grundriss der Seelenlehre*, 1883, 125 ff.; cf. *Ber. u. d. 3. int. Cong. f. Psychol.*, 1897, 146 ff.).

Historically important are (a) the doctrine of unconscious cerebration (Hamilton, Carpenter, & S. Mill; see Carpenter's *Mental Physiol.*, 515 ff.), and (b) the more specific Helmholtzian doctrine of unconscious inference (*Physiol. Optik*, 2nd ed., 602, 962).

For a general discussion of the 'unconscious' in psychology see Baldwin, *Senses and Intellect*, 1890, 45-58, 68; Höfler, *Psychologie*, § 43, 270 ff. (E.B.T.)

**Unconscious** (the, philosophy of): Ger. *Philosophie des Unbewussten*; Fr. *philosophie de l'inconscient*; Ital. *filosofia dell' Inconscio*. The metaphysical system of E. v. Hartmann, by whom the absolute principle is called 'the Unconscious.'

is synonymous with *noesis*, and *ratio* with reflective knowledge. (Hence the ambiguity of 'reason' in English: meaning often reasoning, or reflective thought, and less often intuitive and certain knowledge; *raison* in French is so filled with the concept of logical process that it is hardly fit at all to translate the German Vernunft.) But the significance of the modern distinction is due to Kant. The understanding is thought working according to the schematized categories, and so having validity in relation to experience; reason is thought working without reference to the application of concepts to the material of sense, hence soaring into the supersensuous, and so, while giving us certain ideals of a regulative value, sharing no positive (or constitutive) worth. Coleridge made much of the distinction in English, but without any regard to Kant's careful and critical limitations. Hegel developed the ideas so that reason should express a knowledge which is immediate in certainty and grasp, but the result of the development of the understanding to its full implications (*Lesser Logic*, chap. vi). See SPECULATION. He seems to follow Nicholas of Cusa, who defines understanding as distinguishing and naming, separating opposites according to the principle of contradiction, and reason as that which recognizes the compatibility of opposites. (J.D.)

**Under-statement:** Ger. *Unter Aussage*; Fr. *jugement subordonné, proposition subalterne*; Ital. *subalterna* (or *subordinata*) *proposizione*. A proposition derived from another as an immediate inference, but not equivalent to it; the proposition *q*, if *p* implies *q*, but *q* does not imply *p*.

Thus *No a is both b and c* is an under-statement to *No a is b*; it states only half as much, for *No a is b* affirms that *No a is bc* and also that *No a is b̄c*. From *Whoever breaks, pays*, we can infer *Some who break (if there are any who break) pay*, but not conversely. (C.L.F.)

**Undertaker:** see ENTREPRENEUR.

**Undulation:** see VIBRATION.

**Unfitness:** Ger. *Unangemessenheit*; Fr. *disconvenance* (most general and most philosophical term in use—T.B.F.); Ital. *incapacità*. See FIT, and FITNESS (various topics).

**Unicellular Organisms:** Ger. *einzellige Organismen*; Fr. *organismes unicellulaires*; Ital. *organismi unicellulari*. Living creatures of a single cell.

They comprise the unicellular animals (the

PROTOZOA, q.v.), unicellular (Protophytic) plants, and the undeveloped ova of the (multicellular) METAZOA (q.v.). Cf. AMOEBA for certain details. Interesting work has been done in investigating the behaviour of unicellular organisms under various experimental conditions, for which see the literature.

**Literature:** DAVENPORT, *Compar. Morphol.*; JENNINGS, series of papers, i-vii, in the *Amer. J. of Physiol.*, 1899 ff.; CALKINS, *The Protozoa* (1901). (J.M.B., E.B.F.)

**Unification of Knowledge:** not in use in other languages. A phrase used by Herbert Spencer to define philosophy. He distinguishes three stages of knowledge. The first is ordinary unscientific knowledge, in which each fact stands detached and unconnected. It is ununified. Science generalizes related truths of various departments, but does not attempt to bring these generalizations into a single whole. It is partially unified knowledge. 'The truth of philosophy bears the same relation to the highest scientific truths that each of these bears to lower scientific truths... It is completely unified knowledge.' That is, it takes the generalizations of, say, physics, psychology, and sociology, and reduces them to special cases of a still more general law. In Spencer's theory this highest generalization, through which knowledge is completely unified, is that of evolution and dissolution considered as the formula of the redistribution of matter and motion, and derived from the persistence of force (*First Princ.*, Pt. II. chap. i; see also Guthrie, *On Spencer's Unification of Knowledge*). (J.D.)

**Uniformitarianism:** Ger. (*Theorie der Stetigkeit der Naturentwicklung*); Fr. *naturalisme unitaire* (not exact—T.B.F.); Ital. (*dottrina di*) *uniformità di Natura* (E.M.). The theory that the world as a whole, including the mental and moral, is (1) the outcome of a single system of forces, or (2) the realization of a single principle or law operative without breaks and without interference from without. Cf. UNIFORMITY (2), (3), (4), and CONTINUITY.

This view is often hit off by the motto *Natura non facit saltum*. The term has come into wider use since the rise of the doctrine of evolution, on the one hand, and the philosophy of Hegel, on the other hand. It is a point of view common to naturalism, idealism, and monism; but it is opposed to occasionalism, supernaturalism, and dualism (in metaphysics). (J.M.B., G.F.S.)

**Uniformity** [Lat. *unus*, one, + *forma*, shape]; Ger. *Ein-* (or *Gleich-*) *formigkeit*;

Fr. *uniformité*; Ital. *uniformità*. (1) A fact consisting in this: that, of a certain genus of facts, a proportion approaching unity (the whole) belong, in the course of experience, to a certain species; so that, though of itself the knowledge of this uniformity gives no information concerning a certain thing or character, yet it will strengthen any inductive conclusion of a certain kind.

It is, therefore, a high objective probability concerning an objective probability. There are, in particular, four classes of uniformities, the knowledge of any of which, or of its falsity, may deductively strengthen or weaken an inductive conclusion. These four kinds of uniformity are as follows:—

i. The members of a class may present an extraordinary resemblance to one another in regard to a certain line of characters. Thus, the Icelanders are said to resemble one another most strikingly in their opinions about general subjects. Knowing this, we should not need to question many Icelanders, if we found that the first few whom we met all shared a common superstition, in order to conclude with considerable confidence that nearly all Icelanders were of the same way of thinking. Philodemus insists strongly upon this kind of uniformity as a support of induction.

ii. A character may be such that, in whatever genus it occurs at all, it almost always belongs to all the species of that genus; or this uniformity may be lacking. Thus, when only white swans were known, it would have been hazardous to assert that all swans were white, because whiteness is not usually a generic character. It is considerably more safe to assert that all crows are black, because blackness is oftener a generic character. This kind of uniformity is especially emphasized by J. S. Mill as important in inductive inquiries.

iii. A certain set of characters may be intimately connected so as to be usually all present or all absent from certain kinds of objects. Thus, the different chemical reactions of gold are so inseparable that a chemist need only to succeed in getting, say, the purple of Cassius, to be confident that the body under examination will show every reaction of gold.

iv. Of a certain object it may be known that its characteristic is that when it possesses one of a set of characters within a certain group of such sets, it possesses the rest. Thus, it may be known of a certain man that to whatever party he belongs, he is apt to

embrace without reserve the entire creed of that party. We shall not, then, need to know many of his opinions, say in regard to politics, in order to infer with great confidence his position upon other political questions.

(2) The word 'uniformity' plays such a singular and prominent rôle in the logic of J. S. Mill that it is proper to note it. He was apt to be greatly influenced by Ockham's razor in forming theories which he defended with great logical acumen; but he differed from other men of that way of thinking in that his natural candour led to his making many admissions without perceiving how fatal they were to his negative theories. In addition to that, perhaps more than other philosophers, in endeavouring to embrace several ideas under a common term, he often leaves us at a loss to find any other character common and peculiar to those notions except that of their having received from him that common designation. In one passage of his *System of Logic* (1842), he declares, in reference to the difference in strength between two inductive conclusions, that whoever shall discover the cause of that difference will have discovered the secret of inductive reasoning. When, therefore, he shortly afterwards points out that the distinction between those two inductions is that one of them is supported by a uniformity of the second of the above four classes, while the other is met by a distinct diversity of the same kind, and when he himself gives to that uniformity this designation when he afterwards declares that the validity of induction depends upon uniformity, his reader naturally supposes he means uniformity in that sense. But we find that he employs the word for quite another purpose. Namely, he does not like the word *law*, as applied to an inductive generalization of natural facts—such as the 'law' of gravitation—because it implies an element in nature, the reality of a general, which no nominalist can admit. He, therefore, desires to call the reality to which a true universal proposition about natural phenomena corresponds, a 'uniformity.' The implication of the word, thus used, is that the facts are, in themselves, entirely disconnected, and that it is the mind alone which unites them. One stone dropping to the earth has no real connection with another stone dropping to the earth. It is, surely, not difficult to see that this theory of uniformities, far from helping to establish the validity of induction, would be, if consistently admitted, an insuperable objection to such validity.

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For if two facts, *A* and *B*, are entirely independent in their real nature, then the truth of *B* cannot follow, either necessarily or probably, from the truth of *A*. If I have tried the experiment with a million stones and have found that every one of them fell when allowed to drop, it may be very natural for me to believe that almost any stone will act in the same way. But if it can be proved that there is no real connection between the behaviour of different stones, then there is nothing for it but to say that it was a chance coincidence that those million stones all behaved in the same way; for if there was any reason for it, and they really dropped, there was a real reason, that is, a real general. Now, if it is mere chance that they all dropped, that affords no more reason for supposing that the next will drop, than my throwing three double-sixes successively with a pair of dice is a reason for thinking that the next throw will be double-sixes.

(3) But now we find that Mill's good sense and candour will not allow him to take the course which a Hobbes would have taken, and utterly deny the validity of induction; and this leads to a new use of the word *uniformity*, in which he speaks of the 'uniformity of nature.' Before asking exactly what this phrase means, it may be noted that, whatever it means, the assertion of it is an assent to scholastic realism, except for a difference of emphasis. For to say that throughout the whole course of experience, events always, or even only usually, happen alike under the same conditions (what is usually called the 'invariability' of nature), is to assert an agreement (complete or partial) which could not be ascribed to chance without self-contradiction. For chance is merely the possible discrepancy between the character of the limited experience to which it belongs and the whole course of experience. Hence, to say that of the real, objective facts some general character can be predicated, is to assert the reality of a general. It only differs from scholastic realism in that Mill and his followers treat this aspect of the matter lightly—that is to say, the objective reality of the general—while the Scholastics regarded it as a great and vital feature of the universe. Instead of 'uniformity' now importing that what others call 'laws' are fabrications of the human mind, this 'uniformity of nature' is erected by Mill into the greatest of laws and absolutely objective and real.

Let us now inquire what the 'uniformity

of nature,' with its synonymous expressions that 'the future resembles the past,' and so forth, can mean. Mill says that it means that if all the circumstances attending two phenomena are the same, they will be alike. But taken strictly this means absolutely nothing, since no two phenomena ever can happen in circumstances precisely alike, nor are two phenomena precisely alike. It is, therefore, necessary to modify the statement in order to give it any meaning at all; and it will be found that, however it may be so modified, the moment it begins to carry a definite meaning, one of three things results: it becomes either, first, grossly false, or, second, an assertion which there is really no good reason to believe even approximately true, or thirdly, it becomes a quasi-subjective truth, not lending any colour of validity to induction proper. If, for example, we were to say that under any given species of circumstances presenting any similarity, phenomena of any given genus would be found to have a specific general resemblance in contrast with the specific character of phenomena of the same genus occurring under a different species of circumstances of the same genus, this would be monstrously false, whether intended as an absolutely universal proposition or merely as one approximately true. Let, for example, the genus of phenomena be the values of the throws of a pair of dice in a given series of successive throws indefinitely continued. Let the first species of circumstances be that the ordinal number of a throw in the series is prime. It is pretty certain that there would be no general character in the corresponding values of throws to distinguish them from those which would result when the ordinal number is divisible by 2, or by 3, or by any other prime. It thus appears that when we take any genus of circumstances, the law turns out false. Suppose, then, that we modify it by saying that, taking any genus of phenomena and separating this into two species, there will be found in the discoverable circumstances some general resemblance for all those attending phenomena of the same species in contrast to those attending phenomena of the other species. This is a proposition which there is not the slightest reason to believe. Take, for example, as the genus of phenomena, the many thousands of Latin descriptions of American species of plants by Asa Gray and his scholars. Now consider the species of this genus of phenomena which agree in this respect, that the

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two first words of the description have their first vowels the same. There is no reason to suppose that there was any general respect in which the circumstances of that species of the genus of phenomena agree with one another and differ from others, either universally or usually. It is a mere chance result. It is true that some persons will not be inclined to assent to this judgment; but they cannot prove it otherwise. It can afford no adequate basis for induction. We see, then, that when we consider all phenomena, there is no way of making the statement sufficiently definite and certain. Suppose, then, that we attempt still another modification of the law, that, of interesting resemblances and differences between phenomena, some considerable proportion are accompanied by corresponding resemblances and differences between those of the circumstances which appear to us to be pertinent. The proposition is now rather psychological than metaphysical. It would be impossible, with any evidentiary basis, to strengthen the expression 'some considerable proportion'; and in other respects the statement is vague enough. Still, there is sufficient truth in it, perhaps, to warrant the presumptive adoption of hypotheses, provided this adoption merely means that they are taken as sufficiently reasonable to justify some expense in experimentation to test their truth by induction; but it gives no warrant at all to induction itself. For, in the first place, induction needs no such dubious support, since it is mathematically certain that the general character of a limited experience will, as that experience is prolonged, approximate to the character of what will be true in the long run, if anything is true in the long run. Now all that induction infers is what would be found true in the usual course of experience, if it were indefinitely prolonged. Since the method of induction must generally approximate to that truth, that is a sufficient justification for the use of that method, although no definite proof attaches to the inductive conclusion. In the second place, the law, as now formulated, helps nor hinders the validity of induction proper; for induction proper consists in judging of the relative frequency of a character among all the individuals of a class by the relative frequency of that character among the individuals of a random sample of that class. Now the law, as thus formulated, may tend to make our hypothesis approximately true; but that advantage has been gained before the

operation of induction, which merely tests the hypothesis, begins. This inductive operation is just as valid when the hypothesis is bad as when it is good, when the character dealt with is trivial as when it is interesting. The ratio which induction ascertains may be nearer  $\frac{1}{2}$ , and more remote from 1 or 0, when the characters are uninteresting; and in that case a larger number of instances will usually be requisite for obtaining the ratio with any given degree of precision (for if the ratio is really 1 or 0, it will be almost a miracle if in the sample it is far from that ratio, although this will not be impossible, if the whole class is infinite), but the essential validity of the process of induction remains unaffected by that circumstance.

What is usually meant by the uniformity of nature probably is that in proportion as the circumstances are alike or unlike, so are any phenomena connected with them alike or unlike. It may be asked to what degree nature is uniform in that sense. The only tenable answer is that it is as little uniform as it possibly could be imagined to be; for were any considerable proportion of existing uniformities, or laws, of nature destroyed, others would necessarily thereby result.

In fact, the great characteristic of nature is its diversity. For every uniformity known, there would be no difficulty in pointing out thousands of non-uniformities; but the diversities are usually of small use to us, and attract the attention of poets mainly, while the uniformities are the very staff of life. Hence, the higher and wider are our desires, the greater will be the general impression of uniformity produced upon us by the contemplation of nature as it interests us.

(4) There are senses in which nature may not irrationally be held to be uniform; but opinions differ very widely as to the extent and nature of this uniformity. The chief of these are as follows:—

(a) The majority of physicists, at least of the older generation, hold, with regard to the physical universe, that its elements are masses, their positions, and the variations of these positions with time. It is believed that every motion exactly obeys certain laws of attraction and repulsion; and there is no other kind of law, except that each atom or corpuscle is a centre of energy arranged in equipotential surfaces about it, which follow a regular law; and that this is a permanency. But the equations of motion are differential equations of the second order, involving,

therefore, two arbitrary constants for each moving atom or corpuscle, and there is no uniformity connected with these constants. At least, no such uniformity is, with the least probability, discoverable. As for the distribution of potential about an atom or corpuscle, it is regular; but there is no ulterior reason for that regularity, or, at least, none is probably discoverable. What is absolutely beyond discovery, whether direct and specific or indirect and general, may be considered to be non-existent.

From this usual and in some sense standard opinion there are many divergences in both directions. First, in the direction of greater uniformity.

(b) Some hold that there is some exact uniformity in the arbitrary constants of the motion of the atoms, so that, for example, perhaps at some initial instant they all had some symmetrical or regular arrangement, like a pack of cards unshuffled; and that the velocities at that instant were regular also. But this regularity being of a purely aesthetic or formal kind, and the laws of motion equally formal and unrelated to any purpose, it follows that all kinds of arrangements will be produced, ungoverned by any uniformity, but mere effects of chance. Three stars may, for example, at some instant form an equilateral triangle; but there would be no particular reason for this: it would be merely a casual coincidence.

(c) Others go further and maintain that the constants of position and velocity are subject to a law not merely formal, but are governed by final causes in such a way that there is no arrangement or coincidence whatever which was not specially intended by the Creator. To this theory, such words as *providence* and *fore-knowledge* are ill adapted; because the two constants which each atom or corpuscle has, remain constant throughout all time, and ought not to be considered as having been fixed at any particular epoch. The very idea is that the arrangement is determined by what would be the result of different arrangements at each period of time. If, for example, a given prayer effects rain, it must be supposed that in view of that prayer, and as its consequence, the different atoms had the appropriate constants; but that these were not given to the atoms at any particular epoch, being permanent values. Any intentional action on the part of a free agent is to be explained in the same way. If an agent is to be supposed really free, it is difficult to

see what other physical explanation is compatible with the exactitude of law. This seems to be substantially the notion of most of those who have supported free-will.

On the other hand, many philosophers suppose a less degree of uniformity in nature than is supposed in opinion (a). Of these the following have come to the present writer's notice as being actually defended.

(d) Some suppose that while law is absolute, yet there are constantly arising cases analogous to unstable equilibrium in which, owing to a passage of a velocity through infinity or otherwise, the law does not determine what the motion shall be. Thus if one Boscovichian point attracts another inversely as the square of the distance, and they move in one straight line, then when they come together they may move through one another, or move backwards on the same line, or may separate along any other line, without violating the differential equation. Such 'singularities,' as the mathematicians say, are theoretically possible; and may be supposed to occur very often. But to suppose that free action becomes possible in such a way is very illogical. In the first place, it supposes a direct interaction between 'mind' and matter; infinitesimal, no doubt, but none the less real. Why not better suppose a slight but finite action of this kind, and so avoid the following objections? Namely, in the second place, this is to put faith, not scientific credence, in the inductive laws of matter infinitely beyond what induction can ever warrant. We know very well that mind, in some sense, acts on matter, and matter on mind: the question is *how*. It is not in speculations of this fanciful kind that the true answer is likely to be found. In the third place, although this speculation wanders so far beyond all present knowledge, it nevertheless comes into conflict with a legitimate induction, namely, the supposition of any real 'singularity' or breach of continuity in nature is in as distinct conflict with all our knowledge as is a miracle.

(e) Sundry far less tenable hypotheses of lacunae between inviolable laws have often been proposed. One opinion frequently met with is that the law of energy does not prescribe the direction of velocity, but only its amount; so that the mind may cause atoms to 'swerve,' in regular Lucretian fashion. This singular notion has even been embraced by mathematicians, who are thinking of a projectile shot into a curved tube, or other case of an equation of condition. Of course,

if mind can construct absolute constraints, it can much easier exert force that is finite. Other writers suppose lacunae, without telling us of what particular description they are; they seem to think law is absolute as far as it goes, but that its jurisdiction is limited.

(f) Much more philosophical and less logically objectionable is the notion of St. Augustine and others (it is near to the opinion of Aristotle) that the only fundamental kind of causation is the action of final causes, and that efficient causation is, in all cases, secondary. Accordingly, when a miracle occurs there is no violation of the real *cursus naturae*, but only of the apparent course of things.

(g) The hypothesis suggested by the present writer is that all laws are results of evolution; that underlying all other laws is the only tendency which can grow by its own virtue, the tendency of all things to take habits. Now since this same tendency is the one sole fundamental law of mind, it follows that the physical evolution works towards ends in the same way that mental action works towards ends, and thus in one aspect of the matter it would be perfectly true to say that final causation is alone primary. Yet, on the other hand, the law of habit is a simple formal law, a law of efficient causation; so that either way of regarding the matter is equally true, although the former is more fully intelligent. Meantime, if law is a result of evolution, which is a process lasting through all time, it follows that no law is absolute. That is, we must suppose that the phenomena themselves involve departures from law analogous to errors of observation. But the writer has not supposed that this phenomenon had any connection with free-will. In so far as evolution follows a law, the law of habit, instead of being a movement from homogeneity to heterogeneity, is growth from difformity to uniformity. But the chance divergences from law are perpetually acting to increase the variety of the world, and are checked by a sort of natural selection and otherwise (for the writer does not think the selective principle sufficient), so that the general result may be described as 'organized heterogeneity,' or better rationalized variety. In view of the principle of continuity, the supreme guide in framing philosophical hypotheses, we must, under this theory, regard matter as mind whose habits have become fixed so as to lose the powers of forming them and losing them,

while mind is to be regarded as a chemical genus of extreme complexity and instability. It has acquired in a remarkable degree a habit of taking and laying aside habits. The fundamental divergences from law must here be most extraordinarily high, although probably very far indeed from attaining any directly observable magnitude. But their effect is to cause the laws of mind to be themselves of so fluid a character as to simulate divergences from law. All this, according to the writer, constitutes a hypothesis capable of being tested by experiment.

*Literature:* besides most treatises on LOGIC (q. v., especially inductive) see RENOUVIER and PRAT, *La nouvelle Monadologie* (1899). (C.S.P.)

**Uniformity** (notion of). The objective regularity and orderliness presupposed in the possibility of representing the real world by an ideal construction. 'Whenever any two or more attributes are repeatedly to be connected together, closely or remotely in time or in space, there we have a uniformity. And the general expression, the uniformity of nature, is intended to cover all such partial connections, and to imply that their existence may be detected or reasonably inferred throughout all phenomena whatever' (Venn, *Empirical Logic*, 93).

All contrivance of means towards ends, and indeed all adjustment of action in accordance with previous experience, presupposes as the condition of effectiveness more or less uniformity of coexistence and sequence in natural phenomena. Practical needs lead us to seek for uniformities, and the world is so constituted that we find them. With the development of experience these uniformities assume the form of a system, and a theoretical interest arises in the extension of this system. Finally, the conception of natural process as determined, everywhere and in every minutest detail, by fixed laws comes into being.

(G.F.S., J.M.B., C.L.F.)

**Uniformity of Nature:** see UNIFORMITY (3, 4).

**Unison** [Lat. *unus*, one, + *sonus*, sound]: Ger. *Einklang*; Fr. *unisson*; Ital. *unisono*. The most perfect chord, in which both tones have the same pitch. See Helmholtz, *Sensations of Tone* (Eng. trans.), 187. (E.H.T.)

**Unit** (of physical measurement) [Lat. *unitas*]: Ger. *Einheit*; Fr. *unité*; Ital. *unità*. A portion of any magnitude or quantity employed to express the value of any other portion *P* of the same magnitude or quantity