

tary, whether actually controlled or not, and to apply the term *spontaneous* only to those acts which are *not* reflexes from external stimuli.

The translation is sufficiently good, and the *Open Court* is doing useful work in publishing such books.

### 51 (3 July 1890) 16

#### Pure Logic, and Other Minor Works.

By W. Stanley Jevons. Edited by Robert Adamson and Harriet A. Jevons. Macmillan & Co. 1890.

CSP, identification: MS 1365. See also: Burks, *Bibliography*. This review is unassigned in Haskell's *Index to The Nation*, vol. 1.

Though called Minor, these are scientifically Jevons's most important writings. As when they first appeared, they impress us by their clearness of thought, but not with any great power. The first piece, "Pure Logic," followed by four years De Morgan's "Syllabus of Logic," a dynamically luminous and perfect presentation of an idea. In comparison with that, Jevons's work seemed, and still seems, feeble enough. Its leading idea amounts to saying that existence can be asserted indirectly by denying the existence of something else. But among errors thick as autumn leaves in Vallambrosa, the tract contains a valuable suggestion, a certain modification of Boole's use of the symbol  $+$  in logic. This idea, directly suggested by De Morgan's work, soon presented itself independently to half-a-dozen writers. But Jevons was first in the field, and the idea has come to stay. Mr. Venn is alone in his dissent.

The substance of the second piece in this volume, the "Substitution of Similars," is in its title. Cicero had a wart on his nose; so Burke would be expected to have something like it. This is Mill's inference from particulars to particulars. As a matter of psychology, it is true the one statement suggests the other, but logical connection between them is wholly wanting. The substitution of similars might well be taken as the grand formula of bad reasoning.

Both these tracts warmly advocate the quantification of the predicate—that it is preferable in formal logic to take  $A = B$  as the fundamental form of proposition rather than "If A, then B," or "A belongs among the Bs." The question is not so important as Jevons thought it to be; but we give his three arguments with refutations. First, he says the copula of identity is logically simpler than the copula of inclusion. Not so, for the statement that "man = rational animal" is equivalent to a compound of two propositions with the copula of inclusion, namely, "If anything is a man, it is a rational animal," and "If anything is a rational animal, it is a man." True, Jevons replies that these propositions can be written with a copula of identity,  $A = B$ . But A and B are not symmetrically situated here. They are not simply joined by a sign of equality. Second, Jevons says that logic takes a more unitary development with the proposition of identity than with that of inclusion. He thinks his doctrines of not quantified logic and the substitution of similars call for this copula, but this is quite an error. And then an inference supposes that if the premises are true, the conclusion is true. The

relation of premises to conclusion is thus just that of the terms of the proposition of inclusion. Thus the illative "ergo" is really, a copula of inclusion. Why have any other? Third, Jevons holds the proposition of identity to be the more natural. But, psychologically, propositions spring from association. The subject suggests the predicate. Now the difficulty of saying the words of any familiar thing backwards shows that the suggesting and suggested cannot immediately change places.

The third piece in the volume describes Jevons's logical machine, in every respect inferior to that of Prof. Allan Marquand, and adequate only to inferences of childish simplicity. The higher kinds of reasoning concerning relative terms cannot (as far as we can yet see) be performed mechanically.

The fourth paper advocates the treatment of logic by means of arithmetic—without previous logical analysis of the conception of number, which would call for the logic of relatives. To exhibit the power of his method, Jevons shows that it draws at once such a difficult conclusion as this: "For every man in the house, there is a person who is aged; some of the men are not aged. It follows, that some of the persons in the house are not men." Unfortunately, this is an exhibition not of the power of the method, but of its imbecility, since the reasoning is not good. For if we substitute for "person," even number, for "man," whole number; for "aged," double of an integer, we get this wonderful reasoning: "Every whole number has its double; some whole numbers are not doubles of integers. Hence, some even numbers are not whole numbers."

The remainder of the book is taken up with Jevons's articles against Mill, which were interrupted by his death. The first relates to Mill's theory of mathematical reasoning, which in its main features is correct. The only defect which Jevons brings out is, that no satisfactory mode of proving the approximate truth of the geometrical axioms is indicated. But this is a question of physical, not of mathematical, reasoning. The second criticism, relating to resemblance, seems due to Jevons's not seizing the distinction between a definite attribute, which is a resemblance between its subjects, and Resemblance in general, as a relation between attributes. The third paper concerns Mill's theory of induction. That theory may be stated as follows: When we remark that a good many things of a certain kind have a certain character, and that no such things are found to want it, we find ourselves disposed to believe that all the things of that kind have that character. Though we are unable, at first, to defend this inference, we are none the less under the dominion of the tendency so to infer. Later, we come to the conclusion that certain orders of qualities (such as location) are very variable even in things which otherwise are closely similar, others (as color) are generally common to narrow classes, others again (as growth) to very wide classes. There are, in short, many uniformities in nature; and we come to believe that there is a general and strict uniformity. By making use of these considerations according to four certain methods, we are able to distinguish some inductions as greatly preferable to others. Now, if it be really true that there is a strict uniformity in nature, the fact that inductive inference leads to the truth receives a complete explanation. We believe in our inferences, because we are irresistibly led to do so; and this theory shows why they come out true so often. Such is Mill's doctrine. It misses the essential and dwells on secondary features of scientific inference; but it is an

intelligible doctrine, not open to the charge of paltering inconsistency which Mr. Jevons brings against it.

No doubt there is a good deal of truth in Jevons's criticism of Mill, who was a sagacious but not a very close thinker, and whose style, very perspicuous for him who reads rapidly, is almost impenetrably obscure to him who inquires more narrowly into its meaning. But Mill's examination of Hamilton has a logical penetration and force which we look for in vain in Jevons's articles on Mill.

51 (7 August 1890) 118-119

**Fundamental Problems: The Method of Philosophy as a Systematic Arrangement of Knowledge.**

By Dr. Paul Carus. Chicago: The *Open Court* Publishing Company.

CSP. identification: MS 1365. See also: Burks, *Bibliography*. This review is unassigned in Haskell's *Index to The Nation*, vol. 1.

Paul Carus (1852-1919) was an American author, philosopher, and editor. He was born and educated in Germany, having taken his Ph.D. at Tübingen in 1876. In 1888, Carus assumed the editorship of both *The Open Court* and *The Monist*, which he held until his death. He was author of more than fifty books on philosophy, orientalism, and literature.

A book of newspaper articles on metaphysics, extracted from Chicago's weekly journal of philosophy, the *Open Court*, seems to a New Yorker something singular. But, granted that there is a public with aspirations to understand fundamental problems, the way in which Dr. Carus treats them is not without skill. The questions touched upon are all those which a young person should have turned over in his mind before beginning the serious study of philosophy. The views adopted are, as nearly as possible, the average opinions of thoughtful men to-day—good, ripe doctrines, some of them possibly a little *passées*, but of the fashionable complexion. They are stated with uncompromising vigor; the argumentation does not transcend the capacity of him who runs; and if there be here and there an inconsistency, it only renders the book more suggestive, and adapts it all the better to the need of the public.

The philosophy it advocates is superscientific. "There is no chaos, and never has been a chaos," exclaims the author, although of this no scientific evidence is possible. The doctrine of "the rigidity of natural laws . . . is a *κτῆμα ἐς αἰ.*" Such expressions are natural to Chicago journalists, yet, emphatic as this is, we soon find the *κτῆμα ἐς αἰ.* is nothing but a regulative principle, or "plan for a system." When we afterwards read that, "in our opinion, atoms possess spontaneity, or self-motion," we wonder how, if this is anything more than an empty phrase, it comports with rigid regularity of motion.

Like a stanch Lockian, Dr. Carus declares that "the facts of nature are specie, and our abstract thoughts are bills which serve to economize the process of exchange of thought." Yet these bills form so sound a currency that "the highest laws of nature and the formal laws of thought are identical." Nay, "the doctrine of the conservation of matter and energy, although discovered with the assistance of experience, can be proved in its full scope by the pure reason alone." When

abstract reason performs such a feat as that, is it only economizing the interchange of thought? There is no tincture of Locke here.

Mathematics is highly commended as a "reliable and well established" science. Riemann's stupendous memoir on the hypotheses of geometry is a "meritorious essay." Newton is "a distinguished scientist." At the same time, the views of modern geometers are correctly rendered: "Space is not a non-entity, but a real property of things."

The profession of the *Open Court* is to make an "effort to conciliate religion with science." Is this wise? Is it not an endeavor to reach a foredetermined conclusion? And is not *that* an anti-scientific, anti-philosophical aim? Does not such a struggle imply a defect of intellectual integrity and tend to undermine the whole moral health? Surely, religion is apt to be compromised by attempts at conciliation. Tell the Czar of all the Russias you will conciliate autocracy with individualism; but do not insult religion by offering to conciliate it with any other impulse or development of human nature whatever. Religion, to be true to itself, should demand the unconditional surrender of free-thinking. Science, true to itself, cannot listen to such a demand for an instant. There may be some possible reconciliation between the religious impulse and the scientific impulse; and no fault can be found with a man for believing himself to be in possession of the solution of the difficulty (except that his reasoning may be inconclusive), or for having faith that such a solution will in time be discovered. But to go about to search out that solution, thereby dragging religion before the tribunal of free thought, and committing philosophy to finding a given proposition true—is this a wise or necessary proceeding? Why should not religion and science seek each a self-development in its own interest, and then if, as they approach completion, they are found to come more and more into accord, will not that be a more satisfactory result than forcibly bending them together now in a way which can only disfigure both? For the present, a religion which believes in itself should not mind what science says; and science is long past caring one fig for the thunder of the theologians.

However, these objections apply mainly to the *Open Court's* profession, scarcely at all to its practice; for a journal cannot be said to wrench philosophy into a forced assent to religion which pronounces that "it is undeniable that immaterial realities cannot exist," and that "the appearance of the phenomena of sensation will be found to depend upon a special form in which the molecules of protoplasma combine and disintegrate," and that "the activity called life is a special kind of energy" (a doctrine whose attractiveness is inversely as one's knowledge of dynamics).

Dr. Carus writes an English style several degrees less unpleasant than that of many of our young compatriots who have imbibed the German taste by some years' or months' residence in Berlin or Heidelberg. And as to consistency, whatever may be its importance in a systematic work, in a series of brief articles designed chiefly to stimulate thought, strictly carried out, it would be no virtue, but rather a fault. On the whole, the *Open Court* is marked by sound and enlightened ideas, and the fact that it can by any means find support does honor to Chicago.