gistic reasoning, the loss both to Logic and to Life which results from the frequent failure of logicians to exhibit their Science in vital relation to thought and conduct.

E. E. C. JONES.

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*Traité de Logique Générale et de Logique Formelle.* CH. RENOUVIER. 2 vols. Pp. ix, 397, and 381. Librairie, Armand Colin.

THESE two volumes form the first of Renouvier's three *Essais de critique générale* which are now being republished. Renouvier's work is of some interest at the present time; for he was a convinced finitist, and based a number of metaphysical arguments on his rejection of infinity. It is therefore of interest to see whether his objections have any weight against modern mathematical notions of the infinite with which he was not acquainted. The work is of great (and I think unnecessary) length; it is interspersed with long notes called 'observations and developments' which consist partly of defences and polemics against other thinkers—mainly Mill and Spencer—and partly of further explanations of the author's own views. These notes are often a welcome addition, and perhaps contain the most interesting parts of the book. The second volume, and particularly the last part of it, is probably what will most attract the general philosophical reader.

It is impossible to give a detailed criticism of 780 pages of the most varied matter, and I will content myself with trying to indicate Renouvier's general position and dealing with some special points that strike me as important.

The work claims to be one of analysis of what we can know and do believe ourselves to think about rather than a discussion as to the certainty of belief. All that we can hope to know anything about is representations. These are always two-sided, being analysable into a representing and a represented side; but, though the difference is recognisable, we have not here two existentially separable elements. This does not reduce us to Solipsism, because it is only to representations in general not to *my* representations that human knowledge is confined. And representations do not presuppose substantial selves of which they are states; for, on the contrary, selves are complexes of related representations. If anything could exist apart from being represented it would seem to be such things as extension and duration; but the nature of represented extension and duration (their being continua) is, Renouvier thinks, incompatible with their existence except as objects of re-

presentation, owing to the contradiction which he finds in an actually infinite number. Hence if they exist at all apart from representation they are entirely different from the only extension and duration that we know. Similarly he holds the more generally accepted view that there could be no reason to think that anything exists like the representing side of a representation apart from a represented side too.

Renouvier insists that all that is known is relative (and, so far as I can see) that all that is knowable is relations. Nevertheless analysis does not lead us to an infinite regress, because in the perceptible world we end with irreducible syntheses, and in the world of abstract categories with correlative terms (like part and whole), and the web of relations is a closed one, not one that diverges in infinite lines. The relations of phenomena exhibit a definite order; these types of order are laws, and may be called general phenomena. (His notion of law explicitly includes universals.)

In the third part Renouvier deals with the Categories, which are the ultimate and irreducible laws of knowledge, and, though first recognised in particular experience, are the preconditions of any possible experience. (It is particularly important here to remember his wider meaning of law.) All the categories are syntheses of opposed correlatives, and his list starts with Relation and ends with Personality. In a sense these are the two fundamental ones, because all are special cases of Relation, whilst all involve Personality just because they are laws of representation. All judgments are both analytic and synthetic because all assert identity in some respect together with difference in others. But in a special sense all definitions and all that logically follows from them are analytic (*i.e* the terms of the judgment can be distinguished but cannot be represented apart from each other). There are *à priori* synthetic judgments too These assert relations between categories as *e.g.* 'every event has a cause' which asserts a relation between becoming and causation. He holds that all the laws of logic are logically equivalent and are developed out of the principle that you must understand what you are talking about.

Renouvier then discusses the categories *seriatim*. In a number of long notes to the category of quantity he deals with fractional, negative, and irrational numbers, and the infinitesimal calculus. His treatment of Causality and End introduces the notion of Real Possibility. He does not decide the question, but says that logic has nothing to object to this notion. A note to the Category of Personality contains some good criticisms of Associationism, and connects the doctrine of faculties with the irreducibility of the categories.

The last part of the book deals with the limits of science. He first decides that there are no genuine antinomies. The fact that

the categories are syntheses of opposites is not an objection to them, for the opposites are not applied in the same sense to the same things. And, as a convinced finitist, he rejects the antitheses of the Kantian antinomies for contradicting the Law of Number, whilst he finds the theses logically harmless (the arguments against them being mere unjustifiable inductions to the whole of what is true of its parts). The worst that can be said against the theses is that they are incomprehensible; and this seems merely to mean that *e.g.* we can't hope to tell exactly how large the world is or how long it has lasted, though it must have a definite size and have lasted a finite time. It is interesting to note that he thinks that his notion of Real Possibilities frees him from the necessity of assuming a last event, though not from that of assuming a first one. Finally, under the category of Personality, there is a long discussion of such topics as Creation, Emanation, Monism, etc., and Renouvier concludes that the difficulties of assuming a single creative mind at the beginning are insuperable and we are forced to suppose an original plurality of minds, though we cannot know their number or relations, and thus cannot know the ground-plan of the whole universe even if there be one, which, if the hypothesis of real possibilities be true, there cannot be. This, however, cannot affect the validity of the special sciences, and our complete ignorance of the origin of the universe leaves room for all theistic beliefs which do not necessitate a single creative God.

Such is the main argument of this book. It only remains for me to choose a few of the many points that offer themselves for criticism. I propose to say a few words about Representation, The Law of Number, and the Doctrine of Real Possibilities, and to criticise some statements that are made in his treatment of particular categories.

I think Renouvier's main motive in introducing representation at the very beginning of the book is the following: Whatever we can talk or know about must, while we talk and know about it, stand in some relation to our minds (this is of course a tautology, but Renouvier says that we have to begin with tautologies). Hence it seems plausible to say that the real elements of the world given before all analysis are representations and not objects which are reached by analysing them. This seems plausible, but it is not true; what *our* knowledge starts with is not representations but things represented; we do not become aware of represented objects by analysing our representions, but first become aware of objects and then aware that they are objects, and thus one side of a two sided thing called a representation. Thus the ultimate data for us are not representations, nor even objects known as represented, but objects which as a matter of fact are represented but are not at first thought of as such. When we come to notice that all our data in this sense always existed so long as they were data for us

as objects of our representations the further question of whether there is any reason to believe that they and things like them can also exist out of such complexes of course arises. It seems to me that on this last question Renouvier is very inadequate. His argument is that if there are to be things that are not objects of representation they must at least resemble in some respects the objects of our representations or we could know nothing about them. This is of course true in the sense that they must be capable of description in terms with which we are acquainted. He then tries to prove that in the case of all continua the nature of the object is such that nothing like it could exist apart from a representation. But supposing his objection to infinity to be valid I cannot see how he avoids the following dilemma: While we perceive an extended object that object exists. Now either represented extension has a finite or an infinite number of parts If the former there is no objection to an unrepresented extension; if the latter there is no objection to the existence of an actual infinite, since one actually exists in a represented extension. I understand Renouvier's position to be that even the represented extension is not actually infinitely divided, but that we can simply always think of a smaller piece than we actually are given, whilst what *exists* in the object is only those divisions that are given. But if an infinite divisibility be not a quality of represented extension, but only a result of our thoughts about it, I fail to see why something exactly like represented extension, should not exist unperceived. It is further to be noted that Renouvier has to hold (*a*) that there are minimum distances in the world, and (*b*) that we never perceive them If then extension only exists when perceived it would be interesting to know who previously does perceive them, and how they exist if no one does so

This brings us to the celebrated Law of Number of which the author makes so much use. It seems to me quite worthless. All that we are repeatedly told is that an infinite number would be one greater than any given number, therefore an infinite given number is a contradiction in terms (presumably because it would be greater than itself). But why define an infinite number in this way? Suppose you say that an infinite number is greater than any that can be reached by successive additions of one to any finite number, then the contradiction disappears. My impression is that Renouvier always regards an infinite number as the last term of the series of inductive numbers, which naturally leads to difficulties. It should be noted here that Renouvier confuses numbers and the aggregates of which they are the numbers; he tells us that numbers are wholes and their units are their parts. Yet he talks of applying number to other things considered as wholes of parts, so that I suppose he would have to say that the number of inches in a foot is twelve because it is the same as the number of ones in twelve, so that twelve not only is a number but has a number. Yet

Renouvier seems to accept an infinite number of possibilities, because he says that it is not a *given* infinite whole. Let us then consider his theory about possibilities.

I am not at all certain that I understand this; and I am not clear whether the view put forward in various places in the second volume, especially page 115 *et seq.*, is or is supposed to be the same as that which in the first volume explains how represented extension can be called infinitely divisible. Renouvier says that there is nothing contrary to logic in supposing that the future is indeterminate; that most people believe it; and, so far as I can see, that the experimental verification of the law of large numbers is at least a presumption that where we have no grounds for expecting one alternative rather than another the two alternatives are really equally probable in themselves This would imply that they are in themselves both possible. In one sense I agree with Renouvier. It seems to me perfectly possible that there are events that cannot even theoretically be predicted because they are not connected with any selection of other events by general laws. And I am ready to admit that the distinction between a determined and a partly undetermined event is that the probability of the former relative to all theoretically available data is 1 or 0, whilst that of the latter is intermediate. But I see no reason to accept the very startling view that propositions asserting the occurrence of such undetermined events in the future are not already true or false, and therefore capable of being known by any mind that could be acquainted with the future in the same immediate way as we are acquainted with parts of the past by memory. In the sense that what is going to happen is already definite, determinism is demanded by the Law of Excluded Middle which I see no reason to reject. If I understand him aright Renouvier rejects the laws of logic for propositions about the future if there be real possibilities. I see no reason to do this, and it is hardly compatible with his view that all the laws of logic are developed out of the demand to know what you are talking about. Renouvier sometimes speaks as if an infinity of possibles were harmless, for instance he has the curious argument against an omniscient mind that it could not know all geometry because the number of possible geometrical propositions is indefinite, whilst—I suppose—to know them all would be to have an infinite number of coexisting states of mind. But surely all these propositions are definite and distinct; if the knowledge of them would be an infinite number of distinct acts the propositions themselves must form an infinite aggregate of distinct elements, which ought to be impossible on Renouvier's views. I may possibly be unfair to the author here, for I find his position about possibilities and infinity very difficult to grasp.

I have only space for a few criticisms on particular points. Renouvier fails to grasp the essential difference between an individual and a universal, and thus fails to recognise that there

are two different syllogisms in Barbara. His theory of judgment which professes to avoid the notion of substance seems to me to be much tied to the notion of material things. Thus it is plausible to say that when I call this pillar-box red I mean that redness or an instance of redness is part of a whole complex which I call the pillar-box; but it is much less plausible to analyse 'red is a colour' in this way. If red be a complex it is at any rate a very different kind from a pillar-box, and it is essential for logic not to slur the difference.

In conclusion I would say that the book is well worth reading once quickly all through and then for a second time carefully with large and judicious 'skipping'. A word of praise is due to the excellent print and margins of this edition. There are few misprints, but on page 355 'immortalité' masquerades as 'immoralité':—happily with no disastrous consequences to either.

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*Pragmatism and Idealism.* By WILLIAM CALDWELL, M.A., D.Sc., SIR WILLIAM MACDONALD, Professor of Moral Philosophy, McGill University, Montreal. London, A. & C. Black, 1913. Pp. viii, 265.

WHEN Pragmatism made its first appearance in our midst it proclaimed what seemed to be a clear and definite doctrine. It was not a new doctrine, indeed it was said to be very old, older than Plato, but it sounded strange and it fell with startling abruptness—a sudden splash ruffling the calm, flowing waters of idealism. It came from America but it was proclaimed in Oxford, securing a settlement, welcome or unwelcome, in the very home of authoritative philosophy. It showed no respect to persons or to systems, loudly demanding that every doctrine should justify its cash value, sometimes indeed insisting on the literal sense of the expression. It was a new doctrine of the nature of truth, the doctrine that truth is a value like goodness and beauty. It assailed the logical theories of truth, declared that truth was not logical in the formal sense—the ideal of consistency and harmony—but psychological, dependent on dispositions such as belief, and practical activity such as verification. It came to be known by the short and familiar maxim "Truth is what works". It met fierce opposition from realist and idealist alike, but though the doctrine came in so palpable a shape that it seemed to invite the easy test of a clear issue, those who thought to grasp it and give it its logical *coup-de-grâce* found it as elusive as when one tries to grasp an eel. So now it has come about that pragmatism is seldom spoken of as a