V.—DISCUSSIONS.

MR. RUSSELL'S *LOWELL LECTURES*.

IN this paper I propose to consider a few of the criticisms of Mr. Russell's *Lowell Lectures* brought forward by Prof. Saunders in the issue of *MIND* for January, 1917. Prof. Saunders attempts to show that on purely general grounds Mr. Russell's results in this book are of little or no philosophical value. It will be my object to prove that Prof. Saunders has not been successful in his attempt.

It appears to be a fact that, on reflexion, it is much more difficult to doubt some kinds of propositions than others, and to doubt the existence of some kinds of things than others. Thus it seems to be more difficult to doubt the existence of our own sense-data than to doubt the existence of other people's sense-data or the existence of unperceived sensibilia.¹ Again on reflexion, the existence of sense-data experienced by us in the immediate past seems less open to question than the existence of points and instants and physical objects which are never given in experience. Then it seems to be much more difficult to doubt propositions asserting that certain spatial or temporal relations hold between sense-data than to doubt propositions about other people's minds and mental states. Further the very hardest propositions to doubt seem to be the Laws of Logic.² Thus there is an obvious sense in which the collection of data that Mr. Russell has specified can be called "hard" data—"data which resist the solvent influence of critical reflexion," and they can quite properly, I think, be called comparatively certain. It seems too, as far as one person can judge, that our own sense-data and the Laws of Logic are the hardest of these hard data and that it is a fact that "the more we reflect upon these, the more we realise exactly what they are, and exactly what a doubt concerning them really means, the more luminously certain do

¹ Mr. Russell uses the name *sensibilia* for those objects which have the same metaphysical and physical status as sense-data, but which are not necessarily data to any mind. See *Scientia*, July, 1914.

² Mr. Russell did not, of course, give a list of the Laws of Logic in his *Lowell Lectures* but a good idea of the nature of one important sub-class of them is given in *Principia Mathematica*, Cambridge, 1910. Cf. Prof. Saunders' article, p. 47.

they become".¹ There is therefore a fairly well-defined body of data which appear to have a comparatively high degree of certainty. In view of the fact that the distinction between "hard" and "soft" data is one of degree it would be impossible to give a precise criterion of whether or not a certain datum is "hard". In his criticism of Mr. Russell's premisses Prof. Saunders has not, I think, adduced any important considerations which cast any doubts on the hardness of the data in question: but just as one can only put forward arguments of a psychological nature in support of Mr. Russell's position on this point, so one can only use the same kind of weapons against it.

After this preliminary discussion of the premisses of Mr. Russell's system we will leave the question of the truth of his assumptions and pass on to a consideration of the development of his system.

Now it must be evident that in general, it is possible to infer from a given set of premisses which includes a principle of deduction, other propositions not contained in this set.² In the system we are discussing, the Laws of Logic are included in the premisses and yet Prof. Saunders takes exception to the fact that other propositions are asserted, apparently merely because they are different from the premisses.³ He asserts that if certain premisses are the only certain facts then nothing else is certain. He, in fact, objects that if sense-data alone are certain in this system (and Mr. Russell has explicitly said that he is going to assume the Laws of Logic to be certain, having given his reasons for considering such an assumption justified) then nothing else is certain. This, of course, is quite true: but Mr. Russell never asserts of any body of facts or propositions that they *alone* are certain. Rather, he suggests that such and such a body be taken as certain. Since the Laws of Logic are included in this body, all logical deductions from the premisses can be justifiably asserted in his system. This class of propositions will, I think, cover all Mr. Russell's statements "constituting his position as such, statements about it, and statements about other philosophies".⁴

¹ It will be noticed that Mr. Russell does not lay himself open to the charge which Prof. Saunders has brought against him, viz., of saying that reflexion upon these hard data makes us realise exactly what they are: the last clause alone follows from the previous ones.

² Cf. *Principia Mathematica* in which three volumes of propositions are inferred from a very small number of primitive propositions.

³ Cf. Prof. Saunders' article, p. 49.

⁴ As I have explained above, Prof. Saunders points out that if only sense-data are certain then nothing else is and seems discomfited with his statement in view of the fact that it itself claims to be certain. This seeming paradox belongs to a type well recognised in modern logic and could, I think, be explained by a judicious application of the doctrine of types to the case in point. *Vide Principia Mathematica*, Introduction, chap. ii.

Having assumed the certainty of this body of data, Mr. Russell attacks an important and interesting problem in physics. Physics consists of a body of propositions expressed in terms of objects not given in experience, such as physical objects and points of space and time. Mr. Russell's thesis is that *in so far as physics is verifiable*, it is possible to give an interpretation of the propositions of physics in terms of objects given in experience. But since no principle by which unexperienced entities can be inferred from experienced ones commends itself as valid, Mr. Russell's only plan is to exhibit these objects as logical constructions of objects given in experience. The propositions in question cannot, I think, be called "impure" propositions in Prof. Saunders' sense; the objects in terms of which they are expressed are merely such as we do not, in fact, experience in sense. In order to give an interpretation of the propositions of physics in terms of objects given in experience we shall substitute certain collections of immediately given objects for objects not given in experience. Further, in order to show that our interpretation is a possible one, it will be necessary to prove that such collections have certain properties. The "relatedness of certain things in certain ways" can then be said to involve "their having certain properties". But by this we do not mean that the things in question are such that we at once recognise that they have these properties: neither do we mean that they "are apprehended to have them on the assumption of their identity to other things known to have them".¹ We merely mean that by a logical process it can be shown that they in fact have the properties in question. It may make this point clear if we consider the question of the construction of points.² We use in their construction sensibilia and the relation of enclosure between two sensibilia—the relation of enclosure by Mr. Russell's premisses is given in experience.³ A relation called a point-producer is defined in terms of this relation of enclosure: it has to be transitive and to have various other properties. Then a special kind

¹ Cf. Prof. Saunders' article, p. 32.

² Cf. p. 115 of the *Lowell Lectures*. But here another interesting point arises. Physics seems to assume that the space with which it deals is continuous. Now it is impossible, in experience, to verify this assumption—and there appears to be no sort or kind of reason for holding that physical space is, in fact, not discrete. But it is not difficult so to supplement the sense-data given in experience by the assumption of unperceived sensibilia, that a continuous space can be constructed out of them: and the assumption of the existence of these interpolated sensibilia is not contrary to any facts of experience. But we could construct a discrete space out of the sense-data given in experience and this is the important point for Mr. Russell's thesis that *in so far as physics is verifiable*, it is possible to give an interpretation of the propositions of physics in terms of objects given in experience. But the point I wish to make with respect to *how* the properties of these logical constructions are established is unaffected by the fact that in this particular construction that I am using as an illustration, certain sensibilia are interpolated.

of series called a punctual enclosure-series is defined: any set of objects is an enclosure-series of any two of them one has to the other a relation of enclosure: further under a certain condition a series is called a "punctual enclosure-series". Then a "point" is all the objects which enclose members of a given punctual enclosure-series. It should now be evident that one could hardly pretend to an immediate knowledge of the properties of points so constructed. It is not at all obvious that they do, in fact, have the properties which geometry requires of them. But it is easy to see that it is possible to work out their properties by means of logical processes. The precisely analogous work of discovering the properties of logically constructed numbers and showing that they are such as are required in arithmetic is exhibited in some detail in *Principia Mathematica*.¹ Moreover, these numbers and points are not "reasoned" to have certain properties on the assumption of their identity to other things known to have them: we do not assume that there are such things as points and then call in our crude geometrical intuitions to help us, first because our constructed points are of such a complicated structure that the intuition is powerless before them; and secondly, because the essence of this method is not to assume the existence of these objects. Thus these points are not known to have certain properties except by a process of logical deduction nor are they reasoned to have them on the assumption of their identity to other things known to have them, as Prof. Saunders suggests.

Further as Prof. Saunders points out, of course constructed entities are not facts in the sense in which we speak of sense-data as "facts" of sense: but, it is this very characteristic of constructions that makes the theory we are discussing, better than those hitherto formulated. Before, it had been thought that it was necessary to assume the existence of physical objects and other objects not given in experience in order to find a possible interpretation of the propositions of physics. Mr. Russell has shown that an interpretation which does not involve their existence is possible. And in pointing out that Mr. Russell's interpretation has this merit, I meet Prof. Saunders' demand on page 32 for "some important sense" in which Mr. Russell's hypotheses are "better than those hitherto formulated". I will now try to show why an interpretation not involving physical objects is, in an important sense, better than an interpretation which involves physical objects.

Let us take a very simple case and consider possible interpretations. Physics gives the proposition "this physical object is to the right of that one". A rough interpretation can be offered as follows: There are two sense-data which are aspects of this physical object and that one respectively, and there is a certain relation between them. But Mr. Russell has shown that it is possible to connect the sense-data usually called "aspects of the

¹ Vide vol. ii., section A.

same thing" by means of continuity and certain causal laws without assuming there is one thing of which they are all aspects. Thus a second interpretation can be given: There are two sense-data which are 'aspects of the same things' as certain other sense-data and there is a certain relation between them. This interpretation does not involve the existence of physical objects. Now it is evident if the first proposition is true, so is the second: but that if the second is true, the first may or may not be true. Thus we have two propositions q and r (say) such that q implies r and r does not imply q .

Then¹ I would maintain that, under these circumstances, one can properly say that r is more probably true than q . Therefore the second interpretation is, in an important sense, better than an interpretation involving the existence of physical objects. Thus for Prof. Saunders' statement I., I would substitute the following proposition: An interpretation of the propositions of physics not involving the existence of physical objects, etc., is more probably true than an interpretation assuming the existence of these objects. Then in answer to Prof. Saunders' objection α , I would maintain that from the premisses it follows that the logical constructions in question involve as constitutive entities and relations only sense-data and such relations as are given in experience and that therefore they are real and abstract in his terminology: and further that in point of fact Mr. Russell has given an interpretation of certain propositions in terms of logical constructions of hard data and has indicated general methods by which it seems possible to do it in other cases. In answer to β I would say that the interpretation we have discussed is in a perfectly definite sense more probably true than others given and as explained above preferable to those hitherto formulated.

¹ Cf. Mr. Russell's *Problems of Philosophy*, p. 125.

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