surely doubt no longer—now that he has learned, from the metaphysician's own lips, that the mind is something which may be *visited by its own states*; not the sum-total of those states in continuous stream or steady co-existence, but something apart from them all, something to which they may form a real object. The integrity of Ferrier's whole system of philosophic thought depends upon the dispelling of this grossest of illusions. Grant this, and Representationism with all its confused rubbish is upon us once more like a flood. Abolish matter as a necessary element in all *possible* existence, and there will be no lack of philosophers starting up to show that it forms no real element in *actual* existence. For if the mind can think without thinking of any *thing* (in that strict hard sense in which the word is used by every one who has no pet theory to expound), it may well be maintained that its direct objects are always thoughts, and that it is only occasionally, or at second-hand, that the material world is apprehended at all. No philosophy of the outer world dealing with certainties—necessary and eternal truths—can ever be based on such a rickety foundation; but a surer ground may be discovered in the proposition that when we say Thought we mean the Mind face to face with some Thing.

ALEXANDER MAIN.

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On Mr. Venn's Explanation of a Gambling Paradox.—Two players, A and B, toss for pennies. A has the option of continuing or stopping the game at any moment as it suits him. Has he, in consequence of this option, any advantage over B?

From one point of view it would seem that A *has* an advantage; for, as the game proceeds, the balance of gains must pass backwards and forwards from one side to the other, and if A makes up his mind to continue until he has won (for example) 10, the time must come when he will have an opportunity of carrying off his gains. On the other hand, it seems obvious *à priori* that no combination of fair bets can be unfair, and that A's option is of no value to him, inasmuch as at any point it is a matter of perfect indifference to him whether he risks another penny or not.

In order to examine the matter more closely, let us suppose that A has originally 1000 pennies, and that he proposes to continue the game until he has won 10, and then to leave off. Under these circumstances, it is clear that in no case can B lose more than 10, whereas A, if unlucky, may lose his whole stock before he has an opportunity of carrying off B's. The case is in fact exactly the same as if B had originally only 10 pennies, and the agreement were to continue the game until either A or B was ruined. The problem thus presented was solved long ago (see Todhunter's *History of Probabilities*, p. 62); and the result, as might have been expected, is that the odds are exactly 100 : 1 that B will be ruined. But it does not follow from this that the arrangement is in any degree advantageous for A; for, if A loses, he loses a sum one hundred times as great as that which he

gains from B in the other (and more probable) contingency. A like argument applies, however great the disproportion of capitals may be. If the sums risked, as well as the chances to which they are subjected, be taken into account, the compensation is complete.

Mr. Venn, however, is of opinion that these considerations do not meet the difficulty. With respect to the argument that A will always win if he goes on long enough, he says—" It may be replied that we have no right to assume that the fortune of the player (A) will hold out in this way, for he may be ruined before his turn of luck comes. This . . . is quite true, but does not explain the difficulty. We have only to suppose the men to be playing on credit to remove the objection. There is no reason whatever why any money should pass between them until the affair is finally settled. All such transactions, really, must be carried on to some extent on credit, unless there is to be the trouble of perpetual payments backwards and forwards; and it is therefore perfectly legitimate to suppose a state of things in which no enquiry is made as to the solvency of either of the parties until the crisis agreed upon has been reached."—(*Logic of Chance*, 2nd edition, ch. xiv., p. 371.) And again a little further on, " A man might safely, for instance, continue to lay an *even* bet that he would get the single prize in a lottery of a thousand tickets, provided he thus doubled, or more than doubled, his stake each time, and unlimited credit was given ".—*Ibid.*, p. 373.

To me, on the contrary, it seems that the question is entirely altered by the introduction of indefinite credit. There is no object, of course, in insisting on perpetual payments, and a credit may properly be allowed to the extent of the *actual resources* of the parties ; but the case is very different when insolvency is permitted. In order to make a comparison, let us suppose, in our previous example, that A has no fortune of his own but is allowed a credit of 1000. If he wins 10 from B without first losing 1000 himself, he retires a victor, and his actual poverty is not exposed. But how does the matter stand if the luck is against him, and he comes to the end of his credit before securing his prize ? When called upon to pay at the termination of the transaction, he has no means of doing so, and thus B is defrauded of his 1000, which in the long run would otherwise compensate him for the more frequent losses of 10. The advantage which A possesses depends entirely, as it seems to me, on the credit which is allowed him, but to which he is not justly entitled, and is of exactly the same nature as that enjoyed by any man of straw, who is nevertheless allowed to trade. What would be thought of a beggar who proposed to toss Baron Rothschild for 1000 pound notes ? and if the proposal were agreed to, would it be said that the beggar's advantage depended upon his power of arbitrarily calling for a stoppage when it suits him and refusing to permit it sooner, and not rather that the one-sided character of the agreement depended on the simple fact that one party could pay if he lost, while the other party could not ?

RAYLEIGH.

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