

CAN WE KNOW ANYTHING AT ALL?*

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IT may seem to you that our meeting to discuss such a question is not without its amusing side. After several of my learned colleagues have been here to tell you what is known of the whole universe—from the bowels of the earth to the farthest star—and just before other learned colleagues (philosophers too) are to propound and discuss very abstruse problems, I am brought here, not altogether willingly, to raise the question: Is any knowledge possible? This surely is “looking before and after” with a vengeance!

I wish to protect myself first of all by leaving my colleagues altogether out of it, and raising the question with a view to your own opinions and beliefs. It may be that some of the previous discussions have been so lucid that you think knowledge a very easy thing, and the question “How do we know?” a very easy one to answer. You may indeed imagine it a much easier question than it really is. On the other hand, many of the things that are said and written may cause you to believe this philosophical conception of knowledge (for it is the very central problem of philosophy) a mere puzzle. You may think it more baffling than you should. When I was told that you were to have a series of philosophical lectures, and was asked to suggest a subject for the opening of the series, I remarked that there could hardly be a philosophical discussion which did not at the outset raise this old problem—little dreaming that I should be asked to discuss it.

Instead of going back to Socrates, as a Greek teacher should, and instead of dealing with the problem in the perhaps precise, but still difficult terminology in which it is most often handled, I shall try to remember that you are fresh from an interesting series of discourses on science, especially the wonders of recent science, and attempt to approach my subject from that point of view. Not that I am so foolish as to attempt to discuss philosophy as though it were something else. Philosophy is a difficult, recondite subject, and there is no use in trying to talk about it in the language of an illustrated newspaper. It is abstract. It has to do with thinking (which only a few people in a generation ever attempt)

*A lecture delivered in Montreal.

and to *think about thinking* requires very hard thinking indeed. If you wish to escape this, you should not invite people to lecture to you about philosophy.

Still, the most difficult thing of all about philosophy is to know where to begin. As you have been listening to lectures on scientific knowledge, that will give us a starting point. Science is not philosophy, and philosophy is not properly speaking science; but when the possibility of scientific knowledge is discussed, and the question is asked: "How does the scientist know?"—you have been brought to the border-land of philosophy.

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You have all heard the expression "exact science", and you are all familiar with the type of analysis of a subject which begins with definitions and exact explanations. In fact there are many people who say that you cannot begin to treat of anything unless you define it and everything connected with it as you go along, and that you cease to explain anything or to talk intelligibly when you leave exact description and definition behind. Now it is just here, precisely at this point, that I wish to begin. I shall try to show that if science or any other knowledge is made to depend upon definition, or indeed on any very exact description, then neither science nor knowledge can exist at all.

Now you may think that a very profitless way of spending an afternoon. You may say: "Oh, but we know that we have science; what then does it matter how we come by it? If it is built on definitions, then the definitions are all right; if it is not, then the definitions do not matter." My reply is that if you say that, you proclaim your indifference to science as well as to philosophy; and from the programme of lectures you are listening to, I should infer that you have some interest in both. It matters tremendously to the scientist what sort of philosophic outlook he has. More particularly in these days when science is so specialized, and at the same time when so many loose thinkers (who may be neither scientists nor philosophers) rush in eagerly, and base the most universal and far-reaching conclusions on the dicta of a certain specialized science. How many ethical and political contentions have been based on that phrase "the survival of the fittest!" That phrase is generally attributed, I believe, to Charles Darwin, but it was not he, nor a scientist indeed, who first used it, but a philosopher, Herbert Spencer, and it is a good example of bad philosophy influencing science and general discussion in a mischievous way.¹

¹ Bad philosophy, because of the ambiguous language. As has often been pointed out "fittest" may mean "fittest to survive," "most likely to survive." But straightway we find that it is being used in argument to mean "most deserving of survival"—a very different thing.

Lest you think I am merely setting up a straw man of science or a straw philosopher, in order to demolish him with dialectic, let me refer you to a few names in the history of science and philosophy during the last three-quarters of a century or more. Eighty-four years ago, to be exact, Mill published his *Logic*. It is very easy for us, here and now, to poke fun at the book. In fact a great many people poke fun at it who have never read it. But the remarkable thing is that the book, bad as it was, had a most extraordinary influence, and upon no men had it more influence than upon men of science. Mill has been called "Purveyor-General of thought to the early Victorians",¹ and the title is not a mere rhetorical flourish. For a generation or so, Mill's *Logic* was law in Cambridge, the especial home of science, as all Cambridge men think, and have some reason for thinking. Read the writings of Huxley, Darwin, and other scientific men; you will see that they not merely accepted Mill as the last word on philosophy, they based much of their scientific reasoning on him.

Very good: what was this philosophy of Mill's like? It professed to be perfectly simple and straightforward. It claimed to accept nothing and to propound nothing except what was based on experience, and it proceeded to propound by the method of exact description and definition. It undertook to prove some of the most unprovable things in human thought. Experiment, definition, and proof of the laws of thought—that is the shortest account I can give of Mill's philosophy. I shall not undertake to analyse and refute it here—that has been done already in a dozen books. I shall only say in passing that (as Aristototle had clearly understood) the laws of thought are quite beyond proof because, as he said, if you undertake to prove anything, you thereby show that you accept the laws of thought. Furthermore, that (as Aristotle also saw) experiment and enumeration may illustrate, but cannot prove a whit more than one single example can, if you understand that single example. Finally, that as certain later nineteenth-century thinkers² saw, the scope of definition is very, very limited. If you like to amuse yourself with such pursuits, you may take many of Mill's definitions and show that they contravene the very rule of definition itself, namely that the definition must nowhere contain the word defined or any synonym for it.

Containing such flaws as these, Mill's book, you can see, must land in a good deal of nonsense, or a good deal of contradiction. As a matter of fact, it does both. What then, you may wish to

¹ By Mr. Asquith, as he then was, in his *Romanes Lecture* 1918.

Notably the late Professor J. Cook Wilson, to whom my debt is great

ask, becomes of the scientific reasoning based on it? Does this question interest you?

There are some who contend that the scientist goes his way, untroubled and undistracted by philosophy. Mr. Bertrand Russell, for example, is never tired saying that this is so. But the history of the science of the last 100 years lends little countenance to the statement. There is, so far as I know, only one scientific period to compare with this last century, and that occurred in the Greek era, between the sixth and the third centuries B. C. Here also science and philosophy were inextricably bound up. Bad philosophy hindered science; sound philosophy immeasurably helped it.

An interesting thing about Mill is that he was not overthrown by science, or anything based on science,—as one might have supposed from Mr. Russell,—but by thinkers, philosophers. Arthur Balfour, now Lord Balfour, has described very vividly how Mill's philosophy ruled everything when he went as an undergraduate to Cambridge. In that home of science it was heresy and an outrage for anyone to see nonsense and contradictions in Mill. Balfour's own book, *A Defence of Philosophic Doubt*, which appeared in 1879, was the first effective blast against Mill. It may interest you to know that a full generation after this blast was blown, Mill still ruled the roast at Toronto University. In the fifties and sixties of the last century, Mill had been amplified and brought into line with evolution by Herbert Spencer, and on the psychological side had been reinforced by Bain. In 1883, four years after Balfour's book appeared, there was published a book on Logic which completely and for all time demolished not only Mill but Spencer and Bain as well. This was the work of F. H. Bradley, an Oxford don, who died very recently. Bradley never claimed any great amount of originality for himself, and several have expressed the opinion that he failed to clear himself of the school he attacked; but if my opinion is worth anything, he is probably the greatest English thinker since Hume. Certainly, though few but philosophic students have heard of him, he has already had a prodigious effect on thought, in which is to be included, of course, science. Bradley, perhaps I should add, is taken as the arch-example of philosophical futility by Mr. Bertrand Russell.

You see, therefore, that it took precisely forty years to lay Mill's ghost in England itself. In Germany and Austria it naturally took longer still. Mill did not take hold there at once; but when he did, he had a great philosophic vogue. Not only so, but he had a great influence on German science, Liebig and Helmholtz both coming under his sway. It was Liebig who first had him translated into German.

Let us now come back to the matter of definition. Most important things cannot be defined at all. That was why Socrates so easily upset his opponents in argument; when they began to talk of something, he asked them to define it. "Just tell us what you are talking about", he would say. It seemed fair enough; they could not object to the request; neither could they comply with it. In the mouth of Socrates the demand for definition performed quite a useful service; it led to precision of language, to abstractness of thinking, and so on. But as a principle of logic, definition is another matter.

Perhaps you are not interested in Socrates, and will allow an illustration from my own experience. At the age of 18 I found myself before the first class I ever had to teach. By a coincidence the school inspector arrived in the class about the same moment as I did—which added considerably to the interest of the situation. The subject was Ancient History, and I began with what seemed to me an obvious starting-point: the poetry of Homer. Something about this seemed to displease the inspector, however, who asked me, over the heads of the class, to define history. I did not know then how to define it, and I don't know now. The inspector, as it later turned out, was a nephew of the great Thomas Carlyle. Imagine, therefore, the scorn with which he said to me (again over the heads of the class) "Fancy undertaking to teach something without being able to say what it is!"

But suppose you asked a man whose business is colour-blending in textile designing to define colour! Suppose you asked a tea-taster to define taste!

And yet there are many who believe that a science, any science whatever, is based on knowledge which may be defined, and upon principles which may be explained inside and out. So Mr. Bertrand Russell, when he comes to write on what he calls Scientific Philosophy, lays special emphasis on the need for a definition of number (Mr. Russell himself had a mathematical training—a very excellent preparation for a philosopher). He actually gives a definition of number by a German mathematical writer, and refers to it as though it were one of the great modern achievements!

The definition is this: *The number of anything is the class-of-classes to which that thing and all similar things belong.* But the expression, *that thing and all similar things*, is meaningless unless we already have a conception of number! It does not define number; it is merely an outlandish circumlocution for the very same thing. He goes on to say that 2 is the class of all couples, 3 the class of all triads. But couple, or pair, or any other such

word, is simply a synonym for 2, not a definition of it. And to say that three is a triad is only to translate the English word *three* by the Greek word for *three*. This is not definition. And the demonstrable fact is that there is no definition of number, or two, or wetness, or dryness, or pleasure, or goodness, or any of these things which Socrates demanded his interlocutors should define, and which Mill undertook to define.

It is the same with laws of thought, first principles or whatever you like to call them. Mill undertook, with the best faith in the world, to explain Causation; and Spencer undertook to explain Intuition on the basis of Natural Selection (that high-sounding and mischievous catch-word). Since the world began there has hardly been uttered such nonsense as they uttered. As Aristotle said, if we are to question these things, human discourse becomes impossible.

But what precisely does happen when we denounce the possibility of defining ultimate things, and of explaining first principles? Mill and Huxley believed that unless you could define and explain—I mean endlessly explain the ultimate things—knowledge is impossible.

It was Huxley who coined the word "Agnosticism." He meant that there were certain things—religion, for example—where one could have no empirical knowledge, where one could not define, the first principles of which one could not explain. In such a field therefore knowledge was impossible, and one was therefore a not-knower, an Agnostic, so far as that special thing went. Leslie Stephen later took up the expression and made it famous.¹

At this point Arthur Balfour entered the fray in the book already mentioned, and roundly told Agnostics that they might as well extend their Agnosticism to the subjects which they claimed to know—that as a matter of fact one could no more explain or define the ultimate things in chemistry or physics than one could define the emotions. Balfour later softened his tone, but both then and later he gave a theological twist to the discussion—a thing of course which he was quite at liberty to do, but with which we in a philosophical discourse have no concern. I shall only say in passing that I think it a very weak-headed argument to maintain that a certain theology may be true because a certain philosophy has been proved to be false.

But, aside from its theology, Mr. Balfour's position left philosophy (and science too, as I believe, though Mr. Russell would call this foolish) in an unenviable position. Mill, the inspired prophet for scientists, had been pulverized; and science, so it might seem, was now left with the desolate dilemma: "Either", the

¹ *An Agnostic's Apology* was not published till 1903 but his first essays appeared just thirty years earlier.

scientists were told, "you work darkly, in a way that cannot be understood by the human intelligence, or you can patch up the old orthodoxies sufficiently to get on with the day's work. You once believed in Mill and the empirical philosophy, and seemed to get on pretty well on the whole,—see whether you cannot continue with them a little longer." I have called this sort of position weak-headed in another respect; to address such an exhortation to the scientists was not exactly animating.

However, so far as I have been able to understand it from a rather careful reading of Lord Balfour's writings, that was where he left the question. For a time, about fifteen or sixteen years ago, he came under the fascination of Bergson, but his mind was too subtle to remain under the spell. Of late years he is certainly to be found in his old place, and that place, to use his own name for it, is *Philosophic Doubt*.

I have already alluded to the philosophy of Bradley, and to what seems to me its profound influence on men of science. (Now please do not misinterpret that to mean that I imagine the scientists to sit up at night reading Bradley's books, and to rise the next morning with an inspiration in scientific discovery. It is only in American histories that things happen as simply as that. Most of the scientists have never even heard Bradley's name. As we said at the beginning, only a very little thinking is done in a century, and it is always done by one or two men. But when it is done, neither we laymen nor the scientists can escape its radio-activity. So with Bradley—though it could be shown that Mr. J. B. S. Haldane and Mr. Julian Huxley, to name two of our younger scientists, came directly under Bradley's influence).

But I think if you began to explain Bradley's notion of *pervasive reality*, in all its metaphysical meaning, to a company of scientists, two things would almost certainly happen. In the first place, a good many of the scientists would go to sleep; but some of those who remained awake, and remained with you, would, after expostulating with you on your philosophical jargon, begin to tell you, in their own scientific jargon, that they understood perfectly well what you were driving at, and that many scientific men had worked on that line for the last few decades. They would be interested to know that Bradley had begun on this line in the seventies.

I wish to come back now to the problem of knowledge in its narrower sense once more, and to deal with it in the time that remains at my disposal. Let us begin with something very simple—you may think too simple—the notion *two*. How do we know what 2 is?

Mill said that we know 2, that we come to the general notion 2-ness—, from having encountered it hundreds and thousands of times. Perhaps you see the logical difficulty in this—the difficulty of recognizing 2 in any given experience unless one knows what it is. Spencer said the human mind comes gradually to such a notion through millions of years by the process of Natural Selection. That is to say, the mind was once incapable of understanding 2, or was capable of misunderstanding it, but by certain necessities of evolution was trained in the direction of understanding it. A logical difficulty in this also may occur to you: the assumption that the mind of a human being is such that at one time it can understand 2, and that at another time it cannot! If Reason ever stood in this curious relation to 2, and 2-ness, does it not stand in this same ambiguous position in respect to all sorts of knowledge at present?

Mill and Spencer have been exploded, but Bertrand Russell goes on as if nothing of the kind had happened. He thinks to-day that 2 or 2-ness is such a notion for the human intelligence that it must be explained and defined. Nay more, he imagines that Frege's definition of number is one of the great achievements, and Mr. Russell says that 2 is *the class of classes to which any particular number 2 and all similar numbers belong*. He says, further, that 2 stands for pair or couple. Surely nothing further needs to be said to show that such a definition simply bristles with difficulties and absurdities.

Put two barley-sticks before a child that cannot talk. If the child as it begins to suck one of the sugar-sticks pushes the other back in your direction (I do not say that it will always happen) what are you to think of the child's notion of two? Is it not clear and distinct, even in this instance—though it may be the very first instance of the kind that has ever presented itself to the child?

Consider now a general notion that may be a little more difficult: Redness. The scientist can tell us a great many things about redness. He can tell us that it is the first colour in the spectrum. That it is caused, as a sensation, like other colour sensations by a certain speed and length of vibration. That the colour red, about which all seeing people are agreed, has a vibration of about 670 millimicrons, but that there are some eyes which see redness distinctly in a vibration of 770 millimicrons, where most eyes see purple, or again in the other direction, where most eyes see yellow. He will tell us also that the vibrations which yield redness are nearest to the heat vibrations, and so forth. But neither child nor scientist *knows redness* in any such way as this.

Nor does the child's notion of redness fail of being general either because of his lack of science or because of his lack of experience. An infant that has heard a garment spoken of as red will pick out a red marble for you from a number of marbles of mixed colours. What is more, a sheep-dog that has been trained to bring home a red cow will pick out a red animal from a herd he has never before seen, though the hues of redness in the two animals and everything else about them are dissimilar. Both child and dog have the conception, the general notion, redness, from having experienced it in one single instance. No scientific knowledge, and no philosophical definition, will ever make it plainer to them.

Does such a frank statement as this bring either science or philosophy into disrepute? That may seem to you a very silly question, but I am trying to approach one or two important things through as simple reasoning as possible. When I say that redness can be perfectly apprehended by an infant or even by a dog, does that decry the physics of light? None of you who have studied the physics of light will think so. On the other hand, does this admission about the child and the dog justify scientists or mathematicians or those who are neither, in the claim that knowledge is unapproachable by reason and that consequently philosophy is moonshine? Those of you who have followed what I said about F. H. Bradley and some of the most startling investigations of recent times will not think so.

Let us now take something not so simple as the recognition of redness or two-ness, something which involves a rational process. Take the case of two celestial bodies, one of them subject to attraction from the other as it revolves around it, and at the same time subject to another force which tends to cause it to move parallel to a given straight line. The resulting orbit of the revolving body will be an ellipse. Now the early nineteenth century way of explaining our conclusion that the orbit will be an ellipse—Mills' explanation of it in particular, but an explanation which scientists accepted—is that the mind analyses as completely as possible the two forces, and then deduces the ellipse from the observation of the two particular forces each of which it understands.

But this will not in the least do. It is true that one is working here with a mathematical problem, or rather with a problem of mathematical physics, and one deduces to a certain extent—for example from the well-known law that a force of attraction varies inversely as the square of the distance, and so on. But one is also assuming something, and something which cannot be given by mathematics, namely the parallelogram of forces.

So also Mill attempts to prove Causation—the very principle he must assume to prove anything.

Euclid took it for granted that we should know what he meant by saying that a straight line is the shortest distance between two points. Now, in spite of the fact that our school authorities consider Euclid too difficult for boys of this generation, I think that any of us know what he means. If we set down two points on a plane surface and stretch a string between them, we have a complete, and I may say a rational knowledge of what is meant. Herbert Spencer actually denied the truth of this. He said that the human mind is so constituted that it may not be able to understand that the arc of a circle is necessarily greater than its chord. And he employed an elaborate argument based on natural selection to show that the mind arrives at this conception very gradually in the generations of men.

Now is it possible to say, if we accept Euclid's account of it (and somehow when I put the two accounts of it side by side, I have no doubt that you will accept Euclid's account rather than Herbert Spencer's) is it possible to say that because you take this account of a straight line, and refuse to attempt a further proof of it, there is anything in or connected with the idea of straightness that you do not know? Must you call yourself an agnostic about straightness because you say: "I see, I understand, I know", and yet can give no further account of how you know? But again: because you claim to know in this case, must you say in another case, in which your mental experience is totally different, that here also you know? Because after one single instance of straightness one needs no more explanation or proof of it, is one to forego the demand for proof where proof seems needed? In the one case your Reason is satisfied, in the other case you are asked to put your Reason to sleep.

And so I come to an answer of my own question: knowledge is possible, but it is possible only to a man who exerts his reason in quest of it. It is always possible, however strange and impossible are the scientific and philosophic accounts given of it from age to age.

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Certain very obvious things follow from this. Knowledge cannot come to one at second-hand—from "experts" or from college professors, or from some tradition. The only real knowers, that is to say, are the sceptics, the minds who look for themselves.

But it is not with these commonplaces that I wish to deal. It is on the rational basis of knowledge that I wish to say a last word.

There are many faculties connected with knowing, and they are all perhaps important—imagination, for example, curiosity, tolerance—but Reason is essential to it. Think of the meaning of a straight line and how we come by it, and you will have no doubt of what I am saying.

Does it not occur to one, then, that we are in danger on this continent of losing knowledge altogether, because we are not keeping this essential in view? We talk of spreading education, sometimes we talk of spreading knowledge even. But what is spreading, surely, is an unwillingness to be rational. What increases alarmingly is the demand that we substitute something else for Reason. I detect it even in books which purport to be philosophical. "If a decay sets in at the top, we are in a bad way indeed." The world has had experience of this before. I have already alluded to the great scientific period among the Greeks. That period ceased, and the Greek contribution to knowledge came to an end, when thinkers and knowers gave up rationalizing, and were content to substitute for it weary catch-words. Instead of the philosophic schools (about which the Bertrand Russells of those days bitterly complained) there came the unintellectual systems, with their cant about human weakness, and the great need for modesty in thinking. Men became modest,—but the Dark Ages were upon them.