The Problems of Philosophy

Bertrand Russell

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PREFACE

IN the following pages I have confined myself in the main to those problems of philosophy in regard to which I thought it possible to say something positive and constructive, since merely negative criticism seemed out of place. For this reason, theory of knowledge occupies a larger space than metaphysics in the present volume, and some topics much discussed by philosophers are treated very briefly, if at all.

I have derived valuable assistance from unpublished writings of G. E. Moore and J. M. Keynes: from the former, as regards the relations of sense−data to physical objects, and from the latter as regards probability and induction. I have also profited greatly by the criticisms and suggestions of Professor Gilbert Murray.
1912

NOTE TO SEVENTEENTH IMPRESSION

WITH reference to certain statements on pages 44, 75, 131, and 132, it should be remarked that this book was written in the early part of 1912 when China was still an Empire, and the name of the then late Prime Minister did begin with the letter B. 1943

CHAPTER I. APPEARANCE AND REALITY

IS there any knowledge in the world which is so certain that no reasonable man could doubt it? This question, which at first sight might not seem difficult, is really one of the most difficult that can be asked. When we have realized the obstacles in the way of a straightforward and confident answer, we shall be well launched

on the study of philosophy −− for philosophy is merely the attempt to answer such ultimate questions, not carelessly and dogmatically, as we do in ordinary life and even in the sciences, but critically after exploring all that makes such questions puzzling, and after realizing all the vagueness and confusion that underlie our ordinary ideas.

In daily life, we assume as certain many things which, on a closer scrutiny, are found to be so full of apparent contradictions that only a great amount of thought enables us to know what it is that we really may believe. In the search for certainty, it is natural to begin with our present experiences, and in some sense, no doubt, knowledge is to be derived from them. But any statement as to what it is that our immediate experiences make us know is very likely to be wrong. It seems to me that I am now sitting in a chair, at a table of a certain shape, on which I see sheets of paper with writing or print. By turning my head I see out of the window buildings and clouds and the sun. I believe that the sun is about ninety−three million miles from the earth; that it is a hot globe many times bigger than the earth; that, owing to the earth's rotation, it rises every morning, and will continue to do so for an indefinite time in the future. I believe that, if any other normal person comes into my room, he will see the same chairs and tables and books and papers as I see, and that the table which I see is the same as the table which I feel pressing against my arm. All this seems to be so evident as to be hardly worth stating, except in answer to a man who doubts whether I know anything. Yet all this may be reasonably doubted, and all of it requires much careful discussion before we can be sure that we have stated it in a form that is wholly true.

To make our difficulties plain, let us concentrate attention on the table. To the eye it is oblong, brown and shiny, to the touch it is smooth and cool and hard; when I tap it, it gives out a wooden sound. Any one else who sees and feels and hears the table will agree with this description, so that it might seem as if no difficulty would arise; but as soon as we try to be more precise our troubles begin. Although I believe that the table is 'really' of the same colour all over, the parts that reflect the light look much brighter than the other parts, and some parts look white because of reflected light. I know that, if I move, the parts that reflect the light will be different, so that the apparent distribution of colours on the table will change. It follows that if several people are looking at the table at the same moment, no two of them will see exactly the same distribution of colours, because no two can see it from exactly the same point of view, and any change in the point of view makes some change in the way the light is reflected.

For most practical purposes these differences are unimportant, but to the painter they are all−important: the painter has to unlearn the habit of thinking that things seem to have the colour which common sense says they 'really' have, and to learn the habit of seeing things as they appear. Here we have already the beginning of one of the distinctions that cause most trouble in philosophy −− the distinction between 'appearance' and 'reality', between what things seem to be and what they are. The painter wants to know what things seem to be, the practical man and the philosopher want to know what they are; but the philosopher's wish to know this is stronger than the practical man's, and is more troubled by knowledge as to the difficulties of answering the question.

To return to the table. It is evident from what we have found, that there is no colour which preeminently appears to be the colour of the table, or even of any one particular part of the table −− it appears to be of different colours from different points of view, and there is no reason for regarding some of these as more really its colour than others. And we know that even from a given point of view the colour will seem different by artificial light, or to a colour−blind man, or to a man wearing blue spectacles, while in the dark there will be no colour at all, though to touch and hearing the table will be unchanged. This colour is not something which is inherent in the table, but something depending upon the table and the spectator and the way the light falls on the table. When, in ordinary life, we speak of the colour of the table, we only mean the sort of colour which it will seem to have to a normal spectator from an ordinary point of view under usual conditions of light. But the other colours which appear under other conditions have just as good a right to be considered real; and therefore, to avoid favouritism, we are compelled to deny that, in itself, the table has any one

particular colour.

The same thing applies to the texture. With the naked eye one can see the gram, but otherwise the table looks smooth and even. If we looked at it through a microscope, we should see roughnesses and hills and valleys, and all sorts of differences that are imperceptible to the naked eye. Which of these is the 'real' table? We are naturally tempted to say that what we see through the microscope is more real, but that in turn would be changed by a still more powerful microscope. If, then, we cannot trust what we see with the naked eye, why should we trust what we see through a microscope? Thus, again, the confidence in our senses with which we began deserts us.

The shape of the table is no better. We are all in the habit of judging as to the 'real' shapes of things, and we do this so unreflectingly that we come to think we actually see the real shapes. But, in fact, as we all have to learn if we try to draw, a given thing looks different in shape from every different point of view. If our table is 'really' rectangular, it will look, from almost all points of view, as if it had two acute angles and two obtuse angles. If opposite sides are parallel, they will look as if they converged to a point away from the spectator; if they are of equal length, they will look as if the nearer side were longer. All these things are not commonly noticed in looking at a table, because experience has taught us to construct the 'real' shape from the apparent shape, and the 'real' shape is what interests us as practical men. But the 'real' shape is not what we see; it is something inferred from what we see. And what we see is constantly changing in shape as we, move about the room; so that here again the senses seem not to give us the truth about the table itself, but only about the appearance of the table.

Similar difficulties arise when we consider the sense of touch. It is true that the table always gives us a sensation of hardness, and we feel that it resists pressure. But the sensation we obtain depends upon how hard we press the table and also upon what part of the body we press with; thus the various sensations due to various pressures or various parts of the body cannot be supposed to reveal directly any definite property of the table, but at most to be signs of some property which perhaps causes all the sensations, but is not actually apparent in any of them. And the same applies still more obviously to the sounds which can be elicited by rapping the table.

Thus it becomes evident that the real table, if there is one, is not the same as what we immediately experience by sight or touch or hearing. The real table, if there is one, is not immediately known to us at all, but must be an inference from what is immediately known. Hence, two very difficult questions at once arise; namely, (1) Is there a real table at all? (2) If so, what sort of object can it be?

It will help us in considering these questions to have a few simple terms of which the meaning is definite and clear. Let us give the name of 'sense−data' to the things that are immediately known in sensation: such things as colours, sounds, smells, hardnesses, roughnesses, and so on. We shall give the name 'sensation' to the experience of being immediately aware of these things. Thus, whenever we see a colour, we have a sensation of the colour, but the colour itself is a sense−datum, not a sensation. The colour is that of which we are immediately aware, and the awareness itself is the sensation. It is plain that if we are to know anything about the table, it must be by means of the sense−data −− brown colour, oblong shape, smoothness, etc. −− which we associate with the table; but, for the reasons which have been given, we cannot say that the table is the sense−data, or even that the sense−data are directly properties of the table. Thus a problem arises as to the relation of the sense−data to the real table, supposing there is such a thing.

The real table, if it exists, we will call a 'physical object'. Thus we have to consider the relation of sense−data to physical objects. The collection of all physical objects is called 'matter'. Thus our two questions may be re−stated as follows: (1) Is there any such thing as matter? (2) If so, what is its nature?

The philosopher who first brought prominently forward the reasons for regarding the immediate objects of our senses as not existing independently of us was Bishop Berkeley (1685−1753). His Three Dialogues between Hylas and Philonous, in Opposition to Sceptics and Atheists, undertake to prove that there is no such thing as matter at all, and that the world consists of nothing but minds and their ideas. Hylas has hitherto believed in matter, but he is no match for Philonous, who mercilessly drives him into contradictions and paradoxes, and makes his own denial of matter seem, in the end, as if it were almost common sense. The arguments employed are of very different value: some are important and sound, others are confused or quibbling. But Berkeley retains the merit of having shown that the existence of matter is capable of being denied without absurdity, and that if there are any things that exist independently of us they cannot be the immediate objects of our sensations.

There are two different questions involved when we ask whether matter exists, and it is important to keep them clear. We commonly mean by 'matter' something which is opposed to 'mind', something which we think of as occupying space and as radically incapable of any sort of thought or consciousness. It is chiefly in this sense that Berkeley denies matter; that is to say, he does not deny that the sense−data which we commonly take as signs of the existence of the table are really signs of the existence of something independent of us, but he does deny that this something is nonmental, that it is neither mind nor ideas entertained by some mind. He admits that there must be something which continues to exist when we go out of the room or shut our eyes, and that what we call seeing the table does really give us reason for believing in something which persists even when we are not seeing it. But he thinks that this something cannot be radically different in nature from what we see, and cannot be independent of seeing altogether, though it must be independent of our seeing. He is thus led to regard the 'real' table as an idea in the mind of God. Such an idea has the required permanence and independence of ourselves, without being −− as matter would otherwise be −− something quite unknowable, in the sense that we can only infer it, and can never be directly and immediately aware of it.

Other philosophers since Berkeley have also held that, although the table does not depend for its existence upon being seen by me, it does depend upon being seen (or otherwise apprehended in sensation) by some mind −− not necessarily the mind of God, but more often the whole collective mind of the universe. This they hold, as Berkeley does, chiefly because they think there can be nothing real −− or at any rate nothing known to be real except minds and their thoughts and feelings. We might state the argument by which they support their view in some such way as this: 'Whatever can be thought of is an idea in the mind of the person thinking of it; therefore nothing can be thought of except ideas in minds; therefore anything else is inconceivable, and what is inconceivable cannot exist.'

Such an argument, in my opinion, is fallacious; and of course those who advance it do not put it so shortly or so crudely. But whether valid or not, the argument has been very widely advanced in one form or another; and very many philosophers, perhaps a majority, have held that there is nothing real except minds and their ideas. Such philosophers are called 'idealists'. When they come to explaining matter, they either say, like Berkeley, that matter is really nothing but a collection of ideas, or they say, like Leibniz (1646−1716), that what appears as matter is really a collection of more or less rudimentary minds.

But these philosophers, though they deny matter as opposed to mind, nevertheless, in another sense, admit matter. It will be remembered that we asked two questions; namely, (1) Is there a real table at all? (2) If so, what sort of object can it be? Now both Berkeley and Leibniz admit that there is a real table, but Berkeley says it is certain ideas in the mind of God, and Leibniz says it is a colony of souls. Thus both of them answer our first question in the affirmative, and only diverge from the views of ordinary mortals in their answer to our second question. In fact, almost all philosophers seem to be agreed that there is a real table. they almost all agree that, however much our sense−data −− colour, shape, smoothness, etc. −− may depend upon us, yet their occurrence is a sign of something existing independently of us, something differing, perhaps, completely from our sense−data whenever we are in a suitable relation to the real table.

Now obviously this point in which the philosophers are agreed −− the view that there is a real table, whatever its nature may be is vitally important, and it will be worth while to consider what reasons there are for accepting this view before we go on to the further question as to the nature of the real table. Our next chapter, therefore, will be concerned with the reasons for supposing that there is a real table at all.

Before we go farther it will be well to consider for a moment what it is that we have discovered so far. It has appeared that, if we take any common object of the sort that is supposed to be known by the senses, what the senses immediately tell us is not the truth about the object as it is apart from us, but only the truth about certain sense−data which, so far as we can see, depend upon the relations between us and the object. Thus what we directly see and feel is merely 'appearance', which we believe to be a sign of some 'reality' behind. But if the reality is not what appears, have we any means of knowing whether there is any reality at all? And if so, have we any means of finding out what it is like?

Such questions are bewildering, and it is difficult to know that even the strangest hypotheses may not be true. Thus our familiar table, which has roused but the slightest thoughts in us hitherto, has become a problem full of surprising possibilities. The one thing we know about it is that it is not what it seems. Beyond this modest result, so far, we have the most complete liberty of conjecture. Leibniz tells us it is a community of souls: Berkeley tells us it is an idea in the mind of God; sober science, scarcely less wonderful, tells us it is a vast collection of electric charges in violent motion.

Among these surprising possibilities, doubt suggests that perhaps there is no table at all. Philosophy, if it cannot answer so many questions as we could wish, has at least the power of asking questions which increase the interest of the world, and show the strangeness and wonder lying just below the surface even in the commonest things of daily life.

CHAPTER II. THE EXISTENCE OF MATTER

IN this chapter we have to ask ourselves whether, in any sense at all, there is such a thing as matter. Is there a table which has a certain intrinsic nature, and continues to exist when I am not looking, or is the table merely a product of my imagination, a dream−table in a very prolonged dream? This question is of the greatest importance. For if we cannot be sure of the independent existence of objects, we cannot be sure of the independent existence of other people's bodies, and therefore still less of other people's minds, since we have no grounds for believing in their minds except such as are derived from observing their bodies. Thus if we cannot be sure of the independent existence of objects, we shall be left alone in a desert −− it may be that the whole outer world is nothing but a dream, and that we alone exist. This is an uncomfortable possibility; but although it cannot be strictly proved to be false, there is not the slightest reason to suppose that it is true. In this chapter we have to see why this is the case.

Before we embark upon doubtful matters, let us try to find some more or less fixed point from which to start. Although we are doubting the physical existence of the table, we are not doubting the existence of the sense−data which made us think there was a table; we are not doubting that, while we look, a certain colour and shape appear to us, and while we press, a certain sensation of hardness is experienced by us. All this, which is psychological, we are not calling in question. In fact, whatever else may be doubtful, some at least of our immediate experiences seem absolutely certain.

Descartes (1596−1650), the founder of modern philosophy, invented a method which may still be used with profit −− the method of systematic doubt. He determined that he would believe nothing which he did not see quite clearly and distinctly to be true. Whatever he could bring himself to doubt, he would doubt, until he saw reason for not doubting it. By applying this method he gradually became convinced that the only existence of which he could be quite certain was own. He imagined a deceitful demon, who presented unreal things to his senses in a perpetual phantasmagoria; it might be very improbable that such a demon existed, but still it was

possible, and therefore doubt concerning things perceived by the senses was possible.

But doubt concerning his own existence was not possible, for if he did not exist, no demon could deceive him. If he doubted, he must exist; if he had any experiences whatever, he must exist. Thus his own existence was an absolute certainty to him. 'I think, therefore I am, ' he said (Cogito, ergo sum); and on the basis of this certainty he set to work to build up again the world of knowledge which his doubt had laid in ruins. By inventing the method of doubt, and by showing that subjective things are the most certain, Descartes performed a great service to philosophy, and one which makes him still useful to all students of the subject.

But some care is needed in using Descartes' argument. 'I think, therefore I am' says rather more than is strictly certain. It might seem as though we were quite sure of being the same person to−day as we were yesterday, and this is no doubt true in some sense. But the real Self is as hard to arrive at as the real table and does not seem to have that absolute, convincing certainty that belongs to particular experiences. When I look at my table and see a certain brown colour, what is quite certain at once is not 'I am seeing a brown colour', but rather, 'a brown colour is being seen'. This of course involves something (or somebody) which (or who) sees the brown colour; but it does not of itself involve that more or less permanent person whom we call 'I'. So far as immediate certainty goes, it might be that the something which sees the brown colour is quite momentary, and not the same as the something which has some different experience the next moment.

Thus it is our particular thoughts and feelings that have primitive certainty. And this applies to dreams and hallucinations as well as to normal perceptions: when we dream or see a ghost, we certainly do have the sensations we think we have, but for various reasons it is held that no physical object corresponds to these sensations. Thus the certainty of our knowledge of our own experiences does not have to be limited in any way to allow for exceptional cases. Here, therefore, we have, for what it is worth, a solid basis from which to begin our pursuit of knowledge.

The problem we have to consider is this: Granted that we are certain of our own sense−data, have we any reason for regarding them as signs of the existence of something else, which we can call the physical object? When we have enumerated all the sense−data which we should naturally regard as connected with the table have we said all there is to say about the table, or is there still something else −− something not a sense−datum, something which persists when we go out of the room? Common sense unhesitatingly answers that there is. What can be bought and sold and pushed about and have a cloth laid on it, and so on, cannot be a mere collection of sense−data. If the cloth completely hides the table, we shall derive no sense−data from the table, and therefore, if the table were merely sense−data, it would have ceased to exist, and the cloth would be suspended in empty air, resting, by a miracle, in the place where the table formerly was. This seems plainly absurd; but whoever wishes to become a philosopher must learn not to be frightened by absurdities.

One great reason why it is felt that we must secure a physical object in addition to the sense−data, is that we want the same object for different people. When ten people are sitting round a dinner−table, it seems preposterous to maintain that they are not seeing the same tablecloth, the same knives and forks and spoons and glasses. But the sense−data are private to each separate person; what is immediately present to the sight of one is not immediately present to the sight of another: they all see things from slightly different points of view, and therefore see them slightly differently. Thus, if there are to be public neutral objects, which can be m some sense known to many different people, there must be something over and above the private and particular sense−data which appear to various people. What reason, then, have we for believing that there are such public neutral objects?

The first answer that naturally occurs to one is that, although different people may see the table slightly differently, still they all see more or less similar things when they look at the table, and the variations in what they see follow the laws of perspective and reflection of light, so that it is easy to arrive at a permanent object underlying all the different people's sense−data. I bought my table from the former occupant of my room; I

could not buy his sense−data, which died when he went away, but I could and did buy the confident expectation of more or less similar sense−data. Thus it is the fact that different people have similar sense−data, and that one person in a given place at different times has similar sense−data, which makes us suppose that over and above the sense−data there is a permanent public object which underlies or causes the sense−data of various people at various times.

Now in so far as the above considerations depend upon supposing that there are other people besides ourselves, they beg the very question at issue. Other people are represented to me by certain sense−data, such as the sight of them or the sound of their voices, and if I had no reason to believe that there were physical objects independent of my sense−data, I should have no reason to believe that other people exist except as part of my dream. Thus, when we are trying to show that there must be objects independent of our own sense−data, we cannot appeal to the testimony of other people, since this testimony itself consists of sense−data, and does not reveal other people's experiences unless our own sense−data are signs of things existing independently of us. We must therefore, if possible, find, in our own purely private experiences, characteristics which show, or tend to show, that there are in the world things other than ourselves and our private experiences.

In one sense it must be admitted that we can never prove the existence of things other than ourselves and our experiences. No logical absurdity results from the hypothsis that the world consists of myself and my thoughts and feelings and sensations, and that everything else is mere fancy. In dreams a very complicated world may seem to be present, and yet on waking we find it was a delusion; that is to say, we find that the sense−data in the dream do not appear to have corresponded with such physical objects as we should naturally infer from our sense−data. (It is true that, when the physical world is assumed, it is possible to find physical causes for the sense−data in dreams: a door banging, for instance, may cause us to dream of a naval engagement. But although, in this case, there is a physical cause for the sense−data, there is not a physical object corresponding to the sense−data in the way in which an actual naval battle would correspond.) There is no logical impossibility in the supposition that the whole of life is a dream, in which we ourselves create all the objects that come before us. But although this is not logically impossible, there is no reason whatever to suppose that it is true; and it is, in fact, a less simple hypothesis, viewed as a means of accounting for the facts of our own life, than the common−sense hypothesis that there really are objects independent of us, whose action on us causes our sensations.

The way in which simplicity comes in from supposing that there really are physical objects is easily seen. If the cat appears at one moment in one part of the room, and at another in another part, it is natural to suppose that it has moved from the one to the other, passing over a series of intermediate positions. But if it is merely a set of sense−data, it cannot have ever been in any place where I did not see it; thus we shall have to suppose that it did not exist at all while I was not looking, but suddenly sprang into being in a new place. If the cat exists whether I see it or not, we can understand from our own experience how it gets hungry between one meal and the next; but if it does not exist when I am not seeing it, it seems odd that appetite should grow during non−existence as fast as during existence. And if the cat consists only of sense−data, it cannot be hungry, since no hunger but my own can be a sense−datum to me. Thus the behaviour of the sense−data which represent the cat to me, though it seems quite natural when regarded as an expression of hunger, becomes utterly inexplicable when regarded as mere movements and changes of patches of colour, which are as incapable of hunger as triangle is of playing football.

But the difficulty in the case of the cat is nothing compared to the difficulty in the case of human beings. When human beings speak −− that is, when we hear certain noises which we associate with ideas, and simultaneously see certain motions of lips and expressions of face −− it is very difficult to suppose that what we hear is not the expression of a thought, as we know it would be if we emitted the same sounds. Of course similar things happen in dreams, where we are mistaken as to the existence of other people. But dreams are more or less suggested by what we call waking life, and are capable of being more or less accounted for on

scientific principles if we assume that there really is a physical world. Thus every principle of simplicity urges us to adopt the natural view, that there really are objects other than ourselves and our sense−data which have an existence not dependent upon our perceiving them.

Of course it is not by argument that we originally come by our belief in an independent external world. We find this belief ready in ourselves as soon as we begin to reflect: it is what may be called an instinctive belief. We should never have been led to question this belief but for the fact that, at any rate in the case of sight, it seems as if the sense−datum itself were instinctively believed to be the independent object, whereas argument shows that the object cannot be identical with the sense−datum. This discovery, however −− which is not at all paradoxical in the case of taste and smell and sound, and only slightly so in the case of touch −− leaves undiminished our instinctive belief that there are objects corresponding to our sense−data. Since this belief does not lead to any difficulties, but on the contrary tends to simplify and systematize our account of our experiences, there seems no good reason for rejecting it. We may therefore admit −− though with a slight doubt derived from dreams −− that the external world does really exist, and is not wholly dependent for its existence upon our continuing to perceive it.

The argument which has led us to this conclusion is doubtless less strong than we could wish, but it is typical of many philosophical arguments, and it is therefore worth while to consider briefly its general character and validity. All knowledge, we find, must be built up upon our instinctive beliefs, and if these are rejected, nothing is left. But among our instinctive beliefs some are much stronger than others, while many have, by habit and association, become entangled with other beliefs, not really instinctive, but falsely supposed to be part of what is believed instinctively.

Philosophy should show us the hierarchy of our instinctive beliefs, beginning with those we hold most strongly, and presenting each as much isolated and as free from irrelevant additions as possible. It should take care to show that, in the form in which they are finally set forth, our instinctive beliefs do not clash, but form a harmonious system. There can never be any reason for rejecting one instinctive belief except that it clashes with others; thus, if they are found to harmonize, the whole system becomes worthy of acceptance.

It is of course possible that all or any of our beliefs may be mistaken, and therefore all ought to be held with at least some slight element of doubt. But we cannot have reason to reject a belief except on the ground of some other belief. Hence, by organizing our instinctive beliefs and their consequences, by considering which among them is most possible, if necessary, to modify or abandon, we can arrive, on the basis of accepting as our sole data what we instinctively believe, at an orderly systematic organization of our knowledge, in which, though the possibility of error remains, its likelihood is diminished by the interrelation of the parts and by the critical scrutiny which has preceded acquiescence.

This function, at least, philosophy can perform. Most philosophers, rightly or wrongly, believe that philosophy can do much more than this −− that it can give us knowledge, not otherwise attainable, concerning the universe as a whole, and concerning the nature of ultimate reality. Whether this be the case or not, the more modest function we have spoken of can certainly be performed by philosophy, and certainly suffices, for those who have once begun to doubt the adequacy of common sense, to justify the arduous and difficult labours that philosophical problems involve.

CHAPTER III. THE NATURE OF MATTER

IN the preceding chapter we agreed, though without being able to find demonstrative reasons, that it is rational to believe that our sense−data −− for example, those which we regard as associated with my table −− are really signs of the existence of something independent of us and our perceptions. That is to say, over and above the sensations of colour, hardness, noise, and so on, which make up the appearance of the table to me, I assume that there is something else, of which these things are appearances. The colour ceases to exist if I shut

my eyes, the sensation of hardness ceases to exist if I remove my arm from contact with the table, the sound ceases to exist if I cease to rap the table with my knuckles. But I do not believe that when all these things cease the table ceases. On the contrary, I believe that it is because the table exists continuously that all these sense−data will reappear when I open my eyes, replace my arm, and begin again to rap with my knuckles. The question we have to consider in this chapter is: What is the nature of this real table, which persists independently of my perception of it?

To this question physical science gives an answer, somewhat incomplete it is true, and in part still very hypothetical, but yet deserving of respect so far as it goes. Physical science, more or less unconsciously, has drifted into the view that all natural phenomena ought to be reduced to motions. Light and heat and sound are all due to wave−motions, which travel from the body emitting them to the person who sees light or feels heat or hears sound. That which has the wave−motion is either aether or 'gross matter', but in either case is what the philosopher would call matter. The only properties which science assigns to it are position in space, and the power of motion according to the laws of motion. Science does not deny that it may have other properties; but if so, such other properties are not useful to the man of science, and in no way assist him in explaining the phenomena.

It is sometimes said that 'light is a form of wave−motion', but this is misleading, for the light which we immediately see, which we know directly by means of our senses, is not a form of wave−motion, but something quite different −− something which we all know if we are not blind, though we cannot describe it so as to convey our knowledge to a man who is blind. A wave−motion, on the contrary, could quite well be described to a blind man, since he can acquire a knowledge of space by the sense of touch; and he can experience a wave−motion by a sea voyage almost as well as we can. But this, which a blind man can understand, is not what we mean by light: we mean by light just that which a blind man can never understand, and which we can never describe to him.

Now this something, which all of us who are not blind know, is not, according to science, really to be found in the outer world: it is something caused by the action of certain waves upon the eyes and nerves and brain of the person who sees the light. When it is said that light is waves, what is really meant is that waves are the physical cause of our sensations of light. But light itself, the thing which seeing people experience and blind people do not, is not supposed by science to form any part of the world that is independent of us and our senses . And very similar remarks would apply to other kinds of sensations.

It is not only colours and sounds and so on that are absent from the scientific world of matter, but also space as we get it through sight or touch. It is essential to science that its matter should be in a space, but the space in which it is cannot be exactly the space we see or feel. To begin with, space as we see it is not the same as space as we get it by the sense of touch; it is only by experience in infancy that we learn how to touch things we see, or how to get a sight of things which we feel touching us. But the space of science is neutral as between touch and sight; thus it cannot be either the space of touch or the space of sight.

Again, different people see the same object as of different shapes, according to their point of view. A circular coin, for example, though we should always judge it to be circular, will look oval unless we are straight in front of it. When we judge that it is circular, we are judging that it has a real shape which is not its apparent shape, but belongs to it intrinsically apart from its appearance. But this real shape, which is what concerns science, must be in a real space, not the same as anybody's apparent space. The real space is public, the apparent space is private to the percipient. In different people's private spaces the same object seems to have different shapes; thus the real space, in which it has its real shape, must be different from the private spaces. The space of science, therefore, though connected with the spaces we see and feel, is not identical with them, and the manner of its connexion requires investigation.

We agreed provisionally that physical objects cannot be quite like our sense−data, but may be regarded as causing our sensations. These physical objects are in the space of science, which we may call 'physical' space. It is important to notice that, if our sensations are to be caused by physical objects, there must be a physical space containing these objects and our sense−organs and nerves and brain. We get a sensation of touch from an object when we are in contact with it; that is to say, when some part of our body occupies a place in physical space quite close to the space occupied by the object. We see an object (roughly speaking) when no opaque body is between the object and our eyes in physical space. Similarly, we only hear or smell or taste an object when we are sufficiently near to it, or when it touches the tongue, or has some suitable position in physical space relatively to our body. We cannot begin to state what different sensations we shall derive from a given object under different circumstances unless we regard the object and our body as both in one physical space, for it is mainly the relative positions of the object and our body that determine what sensations we shall derive from the object.

Now our sense−data are situated in our private spaces, either the space of sight or the space of touch or such vaguer spaces as other senses may give us. If, as science and common sense assume, there is one public all−embracing physical space in which physical objects are, the relative positions of physical objects in physical space must more or less correspond to the relative positions of sense−data in our private spaces. There is no difficulty in supposing this to be the case. If we see on a road one house nearer to us than another, our other senses will bear out the view that it is nearer; for example, it will be reached sooner if we walk along the road. Other people will agree that the house which looks nearer to us is nearer; the ordnance map will take the same view; and thus everything points to a spatial relation between the houses corresponding to the relation between the sense−data which we see when we look at the houses. Thus we may assume that there is a physical space in which physical objects have spatial relations corresponding to those which the corresponding sense−data have in our private spaces. It is this physical space which is dealt with in geometry and assumed in physics and astronomy.

Assuming that there is physical space, and that it does thus correspond to private spaces, what can we know about it? We can know only what is required in order to secure the correspondence. That is to say, we can know nothing of what it is like in itself, but we can know the sort of arrangement of physical objects which results from their spatial relations. We can know, for example, that the earth and moon and sun are in one straight line during an eclipse, though we cannot know what a physical straight line is in itself, as we know the look of a straight line in our visual space. Thus we come to know much more about the relations of distances in physical space than about the distances themselves; we may know that one distance is greater than another, or that it is along the same straight line as the other, but we cannot have that immediate acquaintance with physical distances that we have with distances in our private spaces, or with colours or sounds or other sense−data. We can know all those things about physical space which a man born blind might know through other people about the space of sight; but the kind of things which a man born blind could never know about the space of sight we also cannot know about physical space. We can know the properties of the relations required to preserve the correspondence with sense−data, but we cannot know the nature of the terms between which the relations hold.

With regard to time, our feeling of duration or of the lapse of time is notoriously an unsafe guide as to the time that has elapsed by the clock. Times when we are bored or suffering pain pass slowly, times when we are agreeably occupied pass quickly, and times when we are sleeping pass almost as if they did not exist. Thus, in so far as time is constituted by duration, there is the same necessity for distinguishing a public and a private time as there was in the case of space. But in so far as time consists in an order of before and after, there is no need to make such a distinction; the time−order which events seem to have is, so far as we can see, the same as the time−order which they do have. At any rate no reason can be given for supposing that the two orders are not the same. The same is usually true of space: if a regiment of men are marching along a road, the shape of the regiment will look different from different points of view, but the men will appear arranged in the same order from all points of view. Hence we regard the order as true also in physical space, whereas

the shape is only supposed to correspond to the physical space so far as is required for the preservation of the order.

In saying that the time−order which events seem to have is the same as the time−order which they really have, it is necessary to guard against a possible misunderstanding. It must not be supposed that the various states of different physical objects have the same time−order as the sense−data which constitute the perceptions of those objects. Considered as physical objects, the thunder and lightning are simultaneous; that is to say, the lightning is simultaneous with the disturbance of the air in the place where the disturbance begins, namely, where the lightning is. But the sense−datum which we call hearing the thunder does not take place until the disturbance of the air has travelled as far as to where we are. Similarly, it takes about eight minutes for the sun's light to reach us; thus, when we see the sun we are seeing the sun of eight minutes ago. So far as our sense−data afford evidence as to the physical sun they afford evidence as to the physical sun of eight minutes ago; if the physical sun had ceased to exist within the last eight minutes, that would make no difference to the sense−data which we call 'seeing the sun'. This affords a fresh illustration of the necessity of distinguishing between sense−data and physical objects.

What we have found as regards space is much the same as what we find in relation to the correspondence of the sense−data with their physical counterparts. If one object looks blue and another red, we may reasonably presume that there is some corresponding difference between the physical objects; if two objects both look blue, we may presume a corresponding similarity. But we cannot hope to be acquainted directly with the quality in the physical object which makes it look blue or red. Science tells us that this quality is a certain sort of wave−motion, and this sounds familiar, because we think of wave−motions in the space we see. But the wave−motions must really be in physical space, with which we have no direct acquaintance; thus the real wave−motions have not that familiarity which we might have supposed them to have. And what holds for colours is closely similar to what holds for other sense−data. Thus we find that, although the relations of physical objects have all sorts of knowable properties, derived from their correspondence with the relations of sense−data, the physical objects themselves remain unknown in their intrinsic nature, so far at least as can be discovered by means of the senses. The question remains whether there is any other method of discovering the intrinsic nature of physical objects.

The most natural, though not ultimately the most defensible, hypothesis to adopt in the first instance, at any rate as regards visual sense−data, would be that, though physical objects cannot, for the reasons we have been considering, be exactly like sense−data, yet they may be more or less like. According to this view, physical objects will, for example, really have colours, and we might, by good luck, see an object as of the colour it really is. The colour which an object seems to have at any given moment will in general be very similar, though not quite the same, from many different points of view; we might thus uppose the 'real' colour to be a sort of medium colour, intermediate between the various shades which appear from the different points of view.

Such a theory is perhaps not capable of being definitely refuted, but it can be shown to be groundless. To begin with, it is plain that the colour we see depends only upon the nature of the light−waves that strike the eye, and is therefore modified by the medium intervening between us and the object, as well as by the manner in which light is reflected from the object in the direction of the eye. The intervening air alters colours unless it is perfectly clear, and any strong reflection will alter them completely. Thus the colour we see is a result of the ray as it reaches the eye, and not simply a property of the object from which the ray comes. Hence, also, provided certain waves reach the eye, we shall see a certain colour, whether the object from which the waves start has any colour or not. Thus it is quite gratuitous to suppose that physical objects have colours, and therefore there is no justification for making such a supposition. Exactly similar arguments will apply to other sense−data.

It remains to ask whether there are any general philosophical arguments enabling us to say that, if matter is real, it must be of such and such a nature. A explained above, very many philosophers, perhaps most, have held that whatever is real must be in some sense mental, or at any rate that whatever we can know anything about must be in some sense mental. Such philosophers are called 'idealists'. Idealists tell us that what appears as matter is really something mental; namely, either (as Leibniz held) more or less rudimentary minds, or (as Berkeley contended) ideas in the minds which, as we should commonly say, 'perceive' the matter. Thus idealists deny the existence of matter as something intrinsically different from mind, though they do not deny that our sense−data are signs of something which exists independently of our private sensations. In the following chapter we shall consider briefly the reasons −− in my opinion fallacious −− which idealists advance in favour of their theory.

CHAPTER IV. IDEALISM

THE word 'idealism' is used by different philosophers in somewhat different senses. We shall understand by it the doctrine that whatever exists, or at any rate whatever can be known to exist, must be in some sense mental. This doctrine, which is very widely held among philosophers, has several forms, and is advocated on several different grounds. The doctrine is so widely held, and so interesting in itself, that even the briefest survey of philosophy must give some account of it.

Those who are unaccustomed to philosophical speculation may be inclined to dismiss such a doctrine as obviously absurd. There is no doubt that common sense regards tables and chairs and the sun and moon and material objects generally as something radically different from minds and the contents of minds, and as having an existence which might continue if minds ceased. We think of matter as having existed long before there were any minds, and it is hard to think of it as a mere product of mental activity. But whether true or false, idealism is not to be dismissed as obviously absurd.

We have seen that, even if physical objects do have an independent existence, they mus differ very widely from sense−data, and can only have a correspondence with sense−data, in the same sort of way in which a catalogue has a correspondence with the things catalogued. Hence common sense leaves us completely in the dark as to the true intrinsic nature of physical objects, and if there were good reason to regard them as mental, we could not legitimately reject this opinion merely because it strikes us as strange. The truth about physical objects must be strange. It may be unattainable, but if any philosopher believes that he has attained it, the fact that what he offers as the truth is strange ought not to be made a ground of objection to his opinion.

The grounds on which idealism is advocated are generally grounds derived from the theory of knowledge, that is to say, from a discussion of the conditions which things must satisfy in order that we may be able to know them. The first serious attempt to establish idealism on such grounds was that of Bishop Berkeley. He proved first, by arguments which were largely valid, that our sense−data cannot be supposed to have an existence independent of us, but must be, in part at least, 'in' the mind, in the sense that their existence would not continue if there were no seeing or hearing or touching or smelling or tasting. So far, his contention was almost certainly valid, even if some of his arguments were not so. But he went on to argue that sense−data were the only things of whose existence our perceptions could assure us, and that to be known is to be 'in' a mind, and therefore to be mental. Hence he concluded that nothing can ever be known except what is in some mind, and that whatever is known without being in my mind must be in some other mind.

In order to understand his argument, it is necessary to understand his use of the word 'idea'. He gives the name 'idea' to anything which is immediately known, as, for example, sense−data are known Thus a particular colour which we see is an idea; so is a voice which we hear, and so on. But the term is not wholly confined to sense−data. There will also be things remembered or imagined, for with such things also we have immediate acquaintance at the moment of remembering or imagining. All such immediate data he calls 'ideas'.

He then proceeds to consider common objects, such as a tree, for instance. He shows that all we know immediately when we 'perceive' the tree consists of ideas in his sense of the word, and he argues that there is not the slightest ground for supposing that there is anything real about the tree except what is perceived. Its being, he says, consists in being perceived: in the Latin of the schoolmen its 'esse' is 'percipi'. He fully admits that the tree must continue to exist even when we shut our eyes or when no human being is near it. But this continued existence, he says, is due to the fact that God continues to perceive it; the 'real' tree, which corresponds to what we called the physical object, consists of ideas in the mind of God, ideas more or less like those we have when we see the tree, but differing in the fact that they are permanent in God's mind so long as the tree continues to exist. All our perceptions, according to him, consist in a partial participation in God's perceptions, and it is because of this participation that different people see more or less the same tree. Thus apart from minds and their ideas there is nothing in the world, nor is it possible that anything else should ever be known, since whatever is known is necessarily an idea.

There are in this argument a good many fallacies which have been important in the history of philosophy, and which it will be as well to bring to light. In the first place, there is a confusion engendered by the use of the word 'idea'. We think of an idea as essentially something in somebody's mind, and thus when we are told that a tree consists entirely of ideas, it is natural to suppose that, if so, the tree must be entirely in minds. But the notion of being 'in' the mind is ambiguous. We speak of bearing a person in mind, not meaning that the person is in our minds, but that a thought of him is in our minds. When a man says that some business he had to arrange went clean out of his mind, he does not mean to imply that the business itself was ever in his mind, but only that a thought of the business was formerly in his mind, but afterwards ceased to be in his mind. And so when Berkeley says that the tree must be in our minds if we can know it, all that he really has a right to say is that a thought of the tree must be in our minds. To argue that the tree itself must be in our minds is like arguing that a person whom we bear in mind is himself in our minds. This confusion may seem too gross to have been really committed by any competent philosopher, but various attendant circumstances rendered it possible. In order to see how it was possible, we must go more deeply into the question as to the nature of ideas.

Before taking up the general question of the nature of ideas, we must disentangle two entirely separate questions which arise concerning sense−data and physical objects. We saw that, for various reasons of detail, Berkeley was right in treating the sense−data which constitute our perception of the tree as more or less subjective, in the sense that they depend upon us as much as upon the tree, and would not exist if the tree were not being perceived. But this is an entirely different point from the one by which Berkeley seeks to prove that whatever can be immediately known must be in a mind. For this purpose argument of detail as to the dependence of sense−data upon us are useless. It is necessary to prove, generally, that by being known, things are shown to be mental. This is what Berkeley believes himself to have done. It is this question, and not our previous question as to the difference between sense−data and the physical object, that must now concern us.

Taking the word 'idea' in Berkeley's sense, there are two quite distinct things to be considered whenever an idea is before the mind. There is on the one hand the thing of which we are aware −− say the colour of my table −− and on the other hand the actual awareness itself, the mental act of apprehending the thing. The mental act is undoubtedly mental, but is there any reason to suppose that the thing apprehended is in any sense mental? Our previous arguments concerning the colour did not prove it to be mental; they only proved that its existence depends upon the relation of our sense organs to the physical object −− in our case, the table. That is to say, they proved that a certain colour will exist, in a certain light, if a normal eye is placed at a certain point relatively to the table. They did not prove that the colour is in the mind of the percipient.

Berkeley's view, that obviously the colour must be in the mind, seems to depend for its plausibility upon confusing the thing apprehended with the act of apprehension. Either of these might be called an 'idea'; probably either would have been called an idea by Berkeley. The act is undoubtedly in the mind; hence, when

we are thinking of the act, we readily assent to the view that ideas must be in the mind. Then, forgetting that this was only true when ideas were taken as acts of apprehension, we transfer the proposition that 'ideas are in the mind' to ideas in the other sense, i.e. to the things apprehended by our acts of apprehension. Thus, by an unconscious equivocation, we arrive at the conclusion that whatever we can apprehend must be in our minds. This seems to be the true analysis of Berkeley's argument, and the ultimate fallacy upon which it rests.

This question of the distinction between act and object in our apprehending of things is vitally important, since our whole power of acquiring knowledge is bound up with it. The faculty of being acquainted with things other than itself is the main characteristic of a mind. Acquaintance with objects essentially consists in a relation between the mind and something other than the mind; it is this that constitutes the mind's power of knowing things. If we say that the things known must be in the mind, we are either unduly limiting the mind's power of knowing, or we are uttering a mere tautology. We are uttering a mere tautology if we mean by 'in the mind' the same as by 'before the mind', i.e. if we mean merely being apprehended by the mind. But if we mean this, we shall have to admit that what, in this sense, is in the mind, may nevertheless be not mental. Thus when we realize the nature of knowledge, Berkeley's argument is seen to be wrong in substance as well as in form, and his grounds for supposing that 'ideas' −− i.e. the objects apprehended −− must be mental, are found to have no validity whatever. Hence his grounds in favour of idealism may be dismissed. It remains to see whether there are any other grounds.

It is often said, as though it were a self−evident truism, that we cannot know that anything exists which we do not know. It is inferred that whatever can in any way be relevant to our experience must be at least capable of being known by us; whence it follows that if matter were essentially something with which we could not become acquainted, matter would be something which we could not know to exist, and which could have for us no importance whatever. It is generally also implied, for reasons which remain obscure, that what can have no importance for us cannot be real, and that therefore matter, if it is not composed of minds or of mental ideas, is impossible and a mere chimaera.

To go into this argument fully at our present stage would be impossible, since it raises points requiring a considerable preliminary discussion; but certain reasons for rejecting the argument may be noticed at once. To begin at the end: there is no reason why what cannot have any practical importance for us should not be real. It is true that, if theoretical importance is included, everything real is of some importance to us, since, as persons desirous of knowing the truth about the universe, we have some interest in everything that the universe contains. But if this sort of interest is included, it is not the case that matter has no importance for us, provided it exists even if we cannot know that it exists. We can, obviously, suspect that it may exist, and wonder whether it does; hence it is connected with our desire for knowledge, and has the importance of either satisfying or thwarting this desire.

Again, it is by no means a truism, and is in fact false, that we cannot know that anything exists which we do not know. The word 'know' is here used in two different senses. (1) In its first use it is applicable to the sort of knowledge which is opposed to error, the sense in which what we know is true, the sense which applies to our beliefs and convictions, i.e. to what are called judgements. In this sense of the word we know that something is the case. This sort of knowledge may be described as knowledge of truths. (2) In the second use of the word 'know' above, the word applies to our knowledge of things, which we may call acquaintance. This is the sense in which we know sense−data. (The distinction involved is roughly that between savoir and conna”tre in French, or between wissen and kennen in German.)

Thus the statement which seemed like a truism becomes, when re−stated, the following: 'We can never truly judge that something with which we are not acquainted exists.' This is by no means a truism, but on the contrary a palpable falsehood. I have not the honour to be acquainted with the Emperor of China, but I truly judge that he exists. It may be said, of course, that I judge this because of other people's acquaintance with him. This, however, would be an irrelevant retort, since, if the principle were true, I could not know that any

one else is acquainted with him. But further: there is no reason why I should not know of the existence of something with which nobody is acquainted. This point is important, and demands elucidation.

If I am acquainted with a thing which exists, my acquaintance gives me the knowledge that it exists. But it is not true that, conversely, whenever I can know that a thing of a certain sort exists, I or some one else must be acquainted with the thing. What happens, in cases where I have true judgement without acquaintance, is that the thing is known to me by description, and that, in virtue of some general principle, the existence of a thing answering to this description can be inferred from the existence of something with which I am acquainted. In order to understand this point fully, it will be well first to deal with the difference between knowledge by acquaintance and knowledge by description, and then to consider what knowledge of general principles, if any, has the same kind of certainty as our knowledge of the existence of our own experiences. These subjects will be dealt with in the following chapters.

CHAPTER V. KNOWLEDGE BY ACQUAINTANCE AND KNOWLEDGE BY DESCRIPTION

IN the preceding chapter we saw that there are two sorts of knowledge: knowledge of things, and knowledge of truths. In this chapter we shall be concerned exclusively with knowledge of things, of which in turn we shall have to distinguish two kinds. Knowledge of things, when it is of the kind we call knowledge by acquaintance, is essentially simpler than any knowledge of truths, and logically independent of knowledge of truths, though it would be rash to assume that human beings ever, in fact, have acquaintance with things without at the same time knowing some truth about them. Knowledge of things by description, on the contrary, always involves, as we shall find in the course of the present chapter, some knowledge of truths as its source and ground. But first of all we must make dear what we mean by 'acquaintance' and what we mean by 'description'.

We shall say that we have acquaintance with anything of which we are directly aware, without the intermediary of any process of inference or any knowledge of truths. Thus in the presence of my table I am acquainted with the sense−data that make up the appearance of my table −− its colour, shape, hardness, smoothness, etc.; all these are things of which I am immediately conscious when I am seeing and touching my table. The particular shade of colour that I am seeing may have many things said about it −− I may say that it is brown, that it is rather dark, and so on. But such statements, though they make me know truths about the colour, do not make me know the colour itself any better than I did before: so far a concerns knowledge of the colour itself, as opposed to knowledge of truths about it, I know the colour perfectly and completely when I see it, and no further knowledge of it itself is even theoretically possible. Thus the sense−data which make up the appearance of my table are things with which I have acquaintance, things immediately known to me just as they are.

My knowledge of the table as a physical object, on the contrary, is not direct knowledge. Such as it is, it is obtained through acquaintance with the sense−data that make up the appearance of the table. We have seen that it is possible, without absurdity, to doubt whet there is a table at all, whereas it is not possible to doubt the sense−data. My knowledge of the table is of the kind which we shall call 'knowledge by description'. The table is 'the physical object which causes such−and−such sense−data'. This describes the table by means of the sense−data. In order to know anything at all about the table, we must know truths connecting it with things with which we have acquaintance: we must know that 'such−and−such sense−data are caused by a physical object'. There is no state of mind in which we are directly aware of the table; all our knowledge of the table is really knowledge of truths, and the actual thing which is the table is not, strictly speaking, known to us at all. We know a description and we know that there is just one object to which this description applies, though the object itself is not directly known to us. In such a case, we say that our knowledge of the object is knowledge by description.

All our knowledge, both knowledge of things and knowledge of truths, rests upon acquaintance as its foundation. It is therefore important to consider what kinds of things there are with which we have acquaintance.

Sense−data, as we have already seen, are among the things with which we are acquainted; in fact, they supply the most obvious and striking example of knowledge by acquaintance. But if they were the sole example, our knowledge would be very much more restricted than it is. We should only know what is now present to our senses: we could not know anything about the past −− not even that there was a past −− nor could we know any truths about our sense−data, for all knowledge of truths, as we shall show, demands acquaintance with things which are of an essentially different character from sense−data, the things which are sometimes called 'abstract ideas', but which we shall call 'universals'. We have therefore to consider acquaintance with other things besides sense−data if we are to obtain any tolerably adequate analysis of our knowledge.

The first extension beyond sense−data to be considered is acquaintance by memory. It is obvious that we often remember what we have seen or heard or had otherwise present to our senses, and that in such cases we are still immediately aware of what we remember, in spite of the fact that it appears as past and not as present. This immediate knowledge by memory is the source of all our knowledge concerning the past: without it, there could be no knowledge of the past by inference we should never know that there was anything past to be inferred.

The next extension to be considered is acquaintance by introspection. We are not only aware of things, but we are often aware of being aware of them. When I see the sun, I am often aware of my seeing the sun; thus 'my seeing the sun' is an object with which I have acquaintance. When I desire food, I may be aware of my desire for food; thus 'my desiring food' is an object with which I am acquainted. Similarly we may be aware of our feeling pleasure or pain, and generally of the events which happen in our minds. This kind of acquaintance, which may be called self−consciousness, is the source of all our knowledge of mental things. It is obvious that it is only what goes on in our own minds that can be thus known immediately. What goes on in the minds of others is known to us through our perception of their bodies, that is, the sense−data in us which are associated with their bodies. But for our acquaintance with the contents of our own minds, we should be unable to imagine the minds of others, and therefore we could never arrive at the knowledge that they have minds. It seems natural to suppose that self−consciousness is one of the things that distinguish men from animals: animals, we may suppose, though they have acquaintance with sense−data, never become aware of this acquaintance. I do not mean that they doubt whether they exist, but that they have never become conscious of the fact that they have sensations and feelings, nor therefore of the fact that they, the subjects of their sensations and feelings, exist.

We have spoken of acquaintance with the contents of our minds as self−consciousness, but it is not, of course, consciousness of our self: it is consciousness of particular thoughts and feelings. The question whether we are also acquainted with our bare selves, as opposed to particular thoughts and feelings, is a very difficult one, upon which it would be rash to speak positively. When we try to look into ourselves we always seem to come upon some particular thought or feeling, and not upon the 'I' which has the thought or feeling. Nevertheless there are some reasons for thinking that we are acquainted with the 'I', though the acquaintance is hard to disentangle from other things. To make clear what sort of reason there is, let us consider for a moment what our acquaintance with particular thoughts really involves.

When I am acquainted with 'my seeing the sun', it seems plain that I am acquainted with two different things in relation to each other. On the one hand there is the sense−datum which represents the sun to me, on the other hand there is that which sees this sense−datum. All acquaintance, such as my acquaintance with the sense−datum which represents the sun, seems obviously a relation between the person acquainted and the object with which the person is acquainted. When a case of acquaintance is one with which I can be acquainted (as I am acquainted with my acquaintance with the sense−datum representing the sun), it is plain

that the person acquainted is myself. Thus, when I am acquainted with my seeing the sun, the whole fact with which I am acquainted is 'Self−acquainted−with−sense−datum'.

Further, we know the truth 'I am acquainted with this sense−datum'. It is hard to see how we could know this truth, or even understand what is meant by it, unless we were acquainted with something which we call 'I'. It does not seem necessary to suppose that we are acquainted with a more or less permanent person, the same to−day as yesterday, but it does seem as though we must be acquainted with that thing, whatever its nature, which sees the sun and has acquaintance with sense−data. Thus, in some sense it would seem we must be acquainted with our Selves as opposed to our particular experiences. But the question is difficult, and complicated arguments can be adduced on either side. Hence, although acquaintance with ourselves seems probably to occur, it is not wise to assert that it undoubtedly does occur.

We may therefore sum up as follows what has been said concerning acquaintance with things that exist. We have acquaintance in sensation with the data of the outer senses, and in introspection with the data of what may be called the inner sense −− thoughts, feelings, desires, etc.; we have acquaintance in memory with things which have been data either of the outer senses or of the inner sense. Further, it is probable, though not certain, that we have acquaintance with Self, as that which is aware of things or has desires towards things.

In addition to our acquaintance with particular existing things, we also have acquaintance with what we shall call universals, that is to say, general ideas such as whiteness, diversity, brotherhood, and so on. Every complete sentence must contain at least one word which stands for a universal, since all verbs have a meaning which is universal. We shall return to universals later on, in Chapter IX; for the present, it is only necessary to guard against the supposition that whatever we can be acquainted with must be something particular and existent. Awareness of universals is called conceiving, and a universal of which we are aware is called a concept.

It will be seen that among the objects with which we are acquainted are not included physical objects (as opposed to sense−data), nor other people's minds. These things are known to us by what I call 'knowledge by description', which we must now consider.

By a 'description' I mean any phrase of the form 'a so−and−so' or 'the so−and−so'. A phrase of the form 'a so−and−so' I shall call an 'ambiguous' description; a phrase of the form 'the so−and−so' (in the singular) I shall call a 'definite' description. Thus 'a man' is an ambiguous description, and 'the man with the iron mask' is a definite description. There are various problems connected with ambiguous descriptions, but I pass them by, since they do not directly concern the matter we are discussing, which is the nature of our knowledge concerning objects in cases where we know that there is an object answering to a definite description, though we are not acquainted with any such object. This is a matter which is concerned exclusively with definite descriptions. I shall therefore, in the sequel, speak simply of 'descriptions' when I mean 'definite descriptions'. Thus a description will mean any phrase of the form 'the so−and−so' in the singular.

We say that an object is 'known by description' when we know that it is 'the so−and−so', i.e. when we know that there is one object, and no more, having a certain property; and it will generally be implied that we do not have knowledge of the same object by acquaintance. We know that the man with the iron mask existed, and many propositions are known about him; but we do not know who he was. We know that the candidate who gets the most votes will be elected, and in this case we are very likely also acquainted (in the only sense in which one can be acquainted with some one else) with the man who is, in fact, the candidate who will get most votes; but we do not know which of the candidates he is, i.e. we do do not know any proposition of the form 'A is the candidate who will get most votes' where A is one of the candidates by name. We shall say that we have 'merely descriptive knowledge' of the so−and−so when, although we know that the so−and−so exists, and although we may possibly be acquainted with the object which is, in fact, the so−and−so, yet we do not know any proposition 'a is the so−and−so', where a is something with which we are acquainted.

When we say 'the so−and−so exists', we mean that there is just one object which is the so−and−so. The proposition 'a is the so−and−so' means that a has the property so−and−so, and nothing else has. 'Mr. A. is the Unionist candidate for this constituency' means 'Mr. A. is a Unionist candidate for this constituency, and no one else is'. 'The Unionist candidate for this constituency exists' means 'some one is a Unionist candidate for this constituency, and no one else is'. Thus, when we are acquainted with an object which is the so−and−so, we know that the so−and−so exists; but we may know that the so−and−so exists when we are not acquainted with any object which we know to be the so−and−so, and even when we are not acquainted with any object which, in fact, is the so−and−so.

Common words, even proper names, are usually really descriptions. That is to say, the thought in the mind of a person using a proper name correctly can generally only be expressed explicitly if we replace the proper name by a description. Moreover, the description required to express the thought will vary for different people, or for the same person at different times. The only thing constant (so long as the name is rightly used) is the object to which the name applies. But so long as this remains constant, the particular description involved usually makes no difference to the truth or falsehood of the proposition in which the name appears.

Let us take some illustrations. Suppose some statement made about Bismarck. Assuming that there is such a thing as direct acquaintance with oneself, Bismarck himself might have used his name directly to designate the particular person with whom he was acquainted. In this case, if he made a judgement about himself, he himself might be a constituent of the judgement. Here the proper name has the direct use which it always wishes to have, as simply standing for a certain object, and not for a description of the object. But if a person who knew Bismarck made a judgement about him, the case is different. What this person was acquainted with were certain sense−data which he connected (rightly, we will suppose) with Bismarck's body. His body, as a physical object, and still more his mind, were only known as the body and the mind connected with these sense−data. That is, they were known by description. It is, of course, very much a matter of chance which characteristics of a man's appearance will come into a friend's mind when he thinks of him; thus the description actually in the friend's mind is accidental. The essential point is that he knows that the various descriptions all apply to the same entity, in spite of not being acquainted with the entity in question.

When we, who did not know Bismarck, make judgement about him, the description in our minds will probably be some more or less vague mass of historical knowledge −− far more, in most cases, than is required to identify him. But, for the sake of illustration, let us assume that we think of him as 'the first Chancellor of the German Empire'. Here all the words are abstract except 'German'. The word 'German' will, again, have different meanings for different people. To some it will recall travels in Germany, to some the look of Germany on the map, and so on. But if we are to obtain a description which we know to be applicable, we shall be compelled, at some point, to bring in a reference to a particular with which we are acquainted. Such reference is involved in any mention of past, present, and future (as opposed to definite dates), or of here and there, or of what others have told us. Thus it would seem that, in some way or other, a description known to be applicable to a particular must involve some reference to a particular with which we are acquainted, if our knowledge about the thing described is not to be merely what follows logically from the description. or example, 'the most long−lived of men' is a description involving only universals, which must apply to some man, but we can make no judgements concerning this man which involve knowledge about him beyond what the description gives. If, however, we say, 'The first Chancellor of the German Empire was an astute diplomatist', we can only be assured of the truth of our judgement in virtue of something with which we are acquainted −− usually a testimony heard or read. Apart from the information we convey to others, apart from the fact about the actual Bismarck, which gives importance to our judgement, the thought we really have contains the one or more particulars involved, and otherwise consists wholly of concepts.

All names of places −− London, England, Europe, the Earth, the Solar System −− similarly involve, when used, descriptions which start from some one or more particulars with which we are acquainted. I suspect that even the Universe, as considered by metaphysics, involves such a connexion with particulars. In logic on the

contrary, where we are concerned not merely with what does exist, but with whatever might or could exist or be, no reference to actual particulars is involved.

It would seem that, when we make a statement about something only known by description, we often intend to make our statement, not in the form involving the description, but about the actual thing described. That is to say, when we say anything about Bismarck, we should like, if we could, to make the judgement which Bismarck alone can make, namely, the judgement of which he himself is a constituent. In this we are necessarily defeated, since the actual Bismarck is unknown to us. But we know that there is an object B, called Bismarck, and that B was an astute diplomatist. We can thus describe the proposition we should like to affirm, namely, 'B was an astute diplomat', where B is the object which was Bismarck. If we are describing Bismarck as 'the first Chancellor of the German Empire', the proposition we should like to affirm may be described as 'the proposition asserting, concerning the actual object which was the first Chancellor of the German Empire, that this object an astute diplomatist'. What enables us to communicate in spite of the varying descriptions we employ is that we know there is a true proposition concerning the actual Bismarck, and that however we may vary be description (so long as the description is correct) the proposition described is still the same. This proposition, which is described and is known to be true, is what interests us; but we are not acquainted with the proposition itself, and do not know it, though we know it is true.

It will be seen that there are various stages in the removal from acquaintance with particulars: there is Bismarck to people who knew him; Bismarck to those who only know of him through history; the man with the iron mask; the longest−lived of men. These are progressively further removed from acquaintance with particulars; the first comes as near to acquaintance as is possible in regard to another person; in the second, we shall still be said to know 'who Bismarck was'; in the third, we do not know who was the man with the iron mask, though we can know many propositions about him which are not logically deducible from the fact that he wore an iron mask; in the fourth, finally, we know nothing beyond what is logically deducible from the definition of the man. There is a similar hierarchy in the region of universals. Many universals like many particulars, are only known to us by description. But here, as in the case of particulars, knowledge concerning what is known by description is ultimately reducible to knowledge concerning what is known by acquaintance.

The fundamental principle in the analysis of propositions containing descriptions is this: Every proposition which we can understand must be composed wholly of constituents with which we are acquainted.

We shall not at this stage attempt to answer all the objections which may be urged against this fundamental principle. For the present, we shall merely point out that, in some way or other, it must be possible to meet these objections, for it is scarcely conceivable that we can make a judgement or entertain a supposition without knowing what it is that we are judging or supposing about. We must attach some meaning to the words we use, if we are to speak significantly and not utter mere noise; and the meaning we attach to our words must be something with which we are acquainted. Thus when, for example, we make a statement about Julius Caesar, it is plain that Julius Caesar himself is not before our minds, since we are not acquainted with him. We have in mind some description of Julius Caesar: 'the man who was assassinated on the Ides of March', 'the founder of the Roman Empire', or, merely 'the man whose name was Julius Caesar'. (In this last description, Julius Caesar is a noise or shape with which we are acquainted.) Thus our statement does not mean quite what it seems to mean, but means something involving, instead of Julius Caesar, some description of him which is composed wholly of particulars and universals with which we are acquainted.

The chief importance of knowledge by description is that it enables us to pass beyond the limits of our experience. In spite of the fact that we can only know truths which are wholly composed of terms which we have experienced in acquaintance, we can yet have knowledge by description of things which we have never experienced. In view of the very narrow range of our immediate experience, this result is vital, and until it is understood, much of our knowledge must remain mysterious and therefore doubtful.

CHAPTER VI. ON INDUCTION

IN almost all our previous discussions we have been concerned in the attempt to get clear as to our data in the way of knowledge of existence. What things are there in the universe whose existence is known to us owing to our being acquainted with them? So far, our answer has been that we are acquainted with our sense−data, and, probably, with ourselves. These we know to exist. And past sense−data which are remembered are known to have existed in the past. This knowledge supplies our data.

But if we are to be able to draw inferences from these data −− if we are to know of the existence of matter, of other people, of the past before our individual memory begins, or of the future, we must know general principles of some kind by means of which such inferences can be drawn. It must be known to us that the existence of some one sort of thing, A, is a sign of the existence of some other sort of thing, B, either at the same time as A or at some earlier or later time, as, for example, thunder is a sign of the earlier existence of lightning. If this were not known to us, we could never extend our knowledge beyond the sphere of our private experience; and this sphere, as we have seen, is exceedingly limited. The question we have now to consider is whether such an extension is possible, and if so, how it is effected.

Let us take as an illustration a matter about which of us, in fact, feel the slightest doubt. We are all convinced that the sun will rise to−morrow. Why? Is this belief a mere blind outcome of past experience, or can it be justified as a reasonable belief? It is not find a test by which to judge whether a belief of this kind is reasonable or not, but we can at least ascertain what sort of general beliefs would suffice, if true, to justify the judgement that the sun will rise to−morrow, and the many other similar judgements upon which our actions are based.

It is obvious that if we are asked why we believe it the sun will rise to−morrow, we shall naturally answer, 'Because it always has risen every day'. We have a firm belief that it will rise in the future, because it has risen in the past. If we are challenged as to why we believe that it will continue to rise as heretofore, we may appeal to the laws of motion: the earth, we shall say, is a freely rotating body, and such bodies do not cease to rotate unless something interferes from outside, and there is nothing outside to interfere with thee earth between now and to−morrow. Of course it might be doubted whether we are quite certain that there is nothing outside to interfere, but this is not the interesting doubt. The interesting doubt is as to whether the laws of motion will remain in operation until to−morrow. If this doubt is raised, we find ourselves in the same position as when the doubt about the sunrise was first raised.

The only reason for believing that the laws of motion remain in operation is that they have operated hitherto, so far as our knowledge of the past enables us to judge. It is true that we have a greater body of evidence from the past in favour of the laws of motion than we have in favour of the sunrise, because the sunrise is merely a particular case of fulfilment of the laws of motion, and there are countless other particular cases. But the real question is: Do any number of cases of a law being fulfilled in the past afford evidence that it will be fulfilled in the future? If not, it becomes plain that we have no ground whatever for expecting the sun to rise to−morrow, or for expecting the bread we shall eat at our next meal not to poison us, or for any of the other scarcely conscious expectations that control our daily lives. It is to be observed that all such expectations are only probable; thus we have not to seek for a proof that they must be fulfilled, but only for some reason in favour of the view that they are likely to be fulfilled.

Now in dealing with this question we must, to begin with, make an important distinction, without which we should soon become involved in hopeless confusions. Experience has shown us that, hitherto, the frequent repetition of some uniform succession or coexistence has been a cause of our expecting the same succession or coexistence on the next occasion. Food that has a certain appearance generally has a certain taste, and it is a severe shock to our expectations when the familiar appearance is found to be associated with an unusual taste. Things which we see become associated, by habit, with certain tactile sensations which we expect if we

touch them; one of the horrors of a ghost (in many ghost−stories) is that it fails to give us any sensations of touch. Uneducated people who go abroad for the first time are so surprised as to be incredulous when they find their native language not understood.

And this kind of association is not confined to men; in animals also it is very strong. A horse which has been often driven along a certain road resists the attempt to drive him in a different direction. Domestic animals expect food when they see the person who feeds them. We know that all these rather crude expectations of uniformity are liable to be misleading. The man who has fed the chicken every day throughout its life at last wrings its neck instead, showing that more refined views as to the uniformity of nature would have been useful to the chicken.

But in spite of the misleadingness of such expectations, . they nevertheless exist. The mere fact that something has happened a certain number of times causes animals and men to expect that it will happen again. Thus our instincts certainly cause us to believe the sun will rise to−morrow, but we may be in no better a position than the chicken which unexpectedly has its neck wrung. We have therefore to distinguish the fact that past uniformities cause expectations as to the future, from the question whether there is any reasonable ground for giving weight to such expectations after the question of their validity has been raised.

The problem we have to discuss is whether there is any reason for believing in what is called 'the uniformity of nature'. The belief in the uniformity of nature is the belief that everything that has happened or will happen is an instance of some general law to which there are no exceptions. The crude expectations which we have been considering are all subject to exceptions, and therefore liable to disappoint those who entertain them. But science habitually assumes, at least as a working hypothesis, that general rules which have exceptions can be replaced by general rules which have no exceptions. 'Unsupported bodies in air fall' is a general rule to which balloons and aeroplanes are exceptions. But the laws of motion and the law of gravitation, which account for the fact that most bodies fall, also account for the fact that balloons and aeroplanes can rise; thus the laws of motion and the law of gravitation are not subject to these exceptions.

The belief that the sun will rise to−morrow might be falsified if the earth came suddenly into contact with a large body which destroyed its rotation; but the laws of motion and the law of gravitation would not be infringed by such an event. The business of science is to find uniformities, such as the laws of motion and the law of gravitation, to which, so far as our experience extends, there are no exceptions. In this search science has been remarkably successful, and it may be conceded that such uniformities have held hitherto. This brings us back to the question: Have we any reason, assuming that they have always held in the past, to suppose that they will hold in the future?

It has been argued that we have reason to know that the future will resemble the past, because what was the future has constantly become the past, and has always been found to resemble the past, so that we really have experience of the future, namely of times which were formerly future, which we may call past futures. But such an argument really begs the very question at issue. We have experience of past futures, but not of future futures, and the question is: Will future futures resemble past futures? This question is not to be answered by an argument which starts from past futures alone. We have therefore still to seek for some principle which shall enable us to know that the future will follow the same laws as the past.

The reference to the future in this question is not essential. The same question arises when we apply the laws that work in our experience to past things of which we have no experience −− as, for example, in geology, or in theories as to the origin of the Solar system. The question we really have to ask is: 'When two things have been found to be often associated, and no instance is known of the one occurring without the other, does the occurrence of one of the two, in a fresh instance, give any good ground for expecting the other?' On our answer to this question must depend the validity of the whole of our expectations as to the future, the whole of the results obtained by induction, and in fact practically all the beliefs upon which our daily life is based.

It must be conceded, to begin with, that the fact that two things have been found often together and never apart does not, by itself, suffice to prove demonstratively that they will be found together in the next case we examine. The most we can hope is that the oftener things are found together, the more probable becomes that they will be found together another time, and that, if they have been found together often enough, the probability will amount almost to certainty. It can never quite reach certainty, because we know that in spite of frequent repetitions there sometimes is a failure at the last, as in the case of the chicken whose neck is wrung. Thus probability is all we ought to seek.

It might be urged, as against the view we are advocating, that we know all natural phenomena to be subject to the reign of law, and that sometimes, on the basis of observation, we can see that only one law can possibly fit the facts of the case. Now to this view there are two answers. The first is that, even if some law which has no exceptions applies to our case, we can never, in practice, be sure that we have discovered that law and not one to which there are exceptions. The second is that the reign of law would seem to be itself only probable, and that our belief that it will hold in the future, or in unexamined cases in the past, is itself based upon the very principle we are examining.

The principle we are examining may be called the principle of induction, and its two parts may be stated as follows:

(a) When a thing of a certain sort A has been found to be associated with a thing of a certain other sort B, and has never been found dissociated from a thing of the sort B, the greater the number of cases in which A and B have been associated, the greater is the probability that they will be associated in a fresh case in which one of them is known to be present;

(b) Under the same circumstances, a sufficient number of cases of association will make the probability of a fresh association nearly a certainty, and will make it approach certainty without limit.

As just stated, the principle applies only to the verification of our expectation in a single fresh instance. But we want also to know that there is a probability in favour of the general law that things of the sort A are always associated with things of the sort B, provided a sufficient number of cases of association are known, and no cases of failure of association are known. The probability of the general law is obviously less than the probability of the particular case, since if the general law is true, the particular case must also be true, whereas the particular case may be true without the general law being true. Nevertheless the probability of the general law is increased by repetitions, just as the probability of the particular case is. We may therefore repeat the two parts of our principle as regards the general law, thus:

(a)The greater the number of cases in which a thing the sort A has been found associated with a thing the sort B, the more probable it is (if no cases of failure of association are known) that A is always associated with B;

(b) Under the same circumstances, a sufficient number of cases of the association of A with B will make it nearly certain that A is always associated with B, and will make this general law approach certainty without limit.

It should be noted that probability is always relative to certain data. In our case, the data are merely the known cases of coexistence of A and B. There may be other data, which might be taken into account, which would gravely alter the probability. For example, a man who had seen a great many white swans might argue by our principle, that on the data it was probable that all swans were white, and this might be a perfectly sound argument. The argument is not disproved by the fact that some swans are black, because a thing may very well happen in spite of the fact that some data render it improbable. In the case of the swans, a man might know that colour is a very variable characteristic in many species of animals, and that, therefore, an induction as to colour is peculiarly liable to error. But this knowledge would be a fresh datum, by no means