VOL. XVI, No. 1. JANUARY 2, 1919

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

PROFESSOR DEWEY'S "ESSAYS IN EXPERIMENTAL LOGIC"

IN reading this collection of essays, I have been conscious of a much greater measure of agreement than the author would consider justifiable on my part. In particular, in passages dealing with my own views, I have often found that the only thing I disagreed with was the opinion that what was said constituted a criticism of me. There seems to me quite clearly to be, in Professor Dewey's outlook, a misunderstanding of some, at least, of the "analytic realists." I shall try, in what follows, chiefly to remove this misunderstanding. Philosophical writing, as a rule, is to my mind far too eristic. There are various classes of difficulties to be dealt with in philosophy, each fairly easy to solve if it stood alone. Each philosopher invents a solution applicable to his own problems, and refuses to recognize those of others. He sees that the theories of others do not solve his problems, but he refuses to see that his theories do not solve the problems of others. I do not wish to offer merely another example of this kind of blindness, since I consider that it constitutes a most serious obstacle to the progress of philosophy. In return, I would beg Professor Dewey to believe that certain questions which interest me can not be solved unless his doctrines are supplemented by theories brought from a region into which, as yet, he has not thought it necessary to penetrate.

A misunderstanding, as between him and those who hold views more akin to mine, is likely to arise through different use of terms. What he calls "logic" does not seem to me to be part of logic at all; I should call it part of psychology. He takes the view—for which there is much better authority than for mine—that logic is concerned with thought. The ways in which we become possessed of what we call "knowledge" are, for him, questions of "logic." His book is said to consist of studies in experimental "logic." Now in the sense in which I use the word, there is hardly any "logic" in the book except the suggestion that judgments of practise yield a special form—a suggestion which belongs to logic in my sense, though I do

not accept it as a valid one. A great deal of his criticism of my views on the external world rests, I think, upon this difference of terminology. He insists that what I call data are logical, not psychological, data, and in his sense of these words I entirely agree. I never intended them to be regarded as data which would be psychological in his sense. The subject which I call "logic" is one which apparently does not seem to Professor Dewey a very important one. No doubt he feels that I attach too little importance to matters which he regards as vital. This differing estimate of relative importance is, I think, the main source of differences between him and me. I hope that, if both recognize this, the differences may come to be greatly diminished. It is in this hope, and not in a spirit of controversy, that the following pages are written.

I. Logical and Psychological Data

I will try first of all to set forth what I conceive to be the most important features, from my point of view, in Professor Dewey's doctrine as regards data. To a great extent I am in agreement with his doctrine; but I shall leave the critical consideration of it until I have endeavored to state it. Let us begin with some quotations.

1. "That fruitful thinking—thought that terminates in valid knowledge—goes on in terms of the distinction of facts and judgment, and that valid knowledge is precisely genuine correspondence or agreement, *of some sort,* of fact and judgment, is the common and undeniable assumption" (p. 231).

2. "A functional logic . . . has never for a moment denied the *prima facie* working distinction between 'ideas,' 'thoughts,' 'meanings,' and 'facts,' 'existences,' 'the environment,' nor the necessity of a control of meaning by facts" (p. 236).

3. "The position taken in the essays is frankly realistic in acknowledging that certain brute existences, detected or laid bare by thinking but in no way constituted out of thought or any mental process, set every problem for reflection and hence serve to test its otherwise merely speculative results" (p. 35).

4. *Perceptions* are not themselves cases of knowledge, but they are the source of all our knowledge of the world: "They are the sole ultimate data, the sole media, of inference to all natural objects and processes. While we do not, in any intelligible or verifiable sense, know *them,* we know all things that we do know *with* or *by* them. They furnish the only ultimate evidence of the existence and nature of the objects which we infer, and they are the sole ultimate checks and tests of the inferences. Because of this characteristic use of perceptions, the perceptions themselves acquire, by 'second intention,' a knowledge status. They *become* objects of minute, accurate, and experimental scrutiny" (pp. 259–260).

5. But this cognitive function of perceptions is derivative. It is a "superstition" that "sensations-perceptions are cases of knowledge. . . . Let them [the realists] try the experiment of conceiving perceptions as pure natural events, not as cases of awareness or apprehension, and they will be surprised to see how little they miss" (p. 262).

6. "To find out *what is* given is an inquiry which taxes reflection to the uttermost. Every important advance in scientific methods means better agencies, more skilled technique for simply detaching and describing what is barely there, or given" (p. 152).

7. "According to Mr. James, for example, the original datum is large but confused, and specific sensible qualities represent the result of discriminations. In this case, the elementary data, instead of being primitive empirical data, are the last terms, the limits, of the discriminations we have been able to make" (pp. 298–299).

These quotations may serve for the moment to illustrate Professor Dewey's doctrine as regards data.

The first three raise no point of controversy as between him and me. The sixth and seventh, though I believe he would regard them as affording an argument against some of my views, certainly do not say anything that I disagree with, except in so far as there is an ambiguity in the second sentence of the seventh: "primitive empirical data" may mean primitive in time, or primitive in logic. The logical articulation of a man's knowledge changes as his knowledge increases; at every stage, there will be parts of his knowledge that are logically more primitive and parts that are logically less so. What, at an advanced stage of knowledge, is primitive in logic, may be very far from primitive in time. The last terms in our discriminations are very likely to become *logically* primitive in our knowledge very soon after we have reached them. But if Professor Dewey means "primitive in time," there is no matter of disagreement between us so far.

The different senses in which things may be "data" need to be considered somewhat more fully, if misunderstandings are to be removed. When I speak of "data," more particularly of "hard data," I am not thinking of those objects which constitute data to children or monkeys: I am thinking of the objects which seem data to a trained scientific observer. It is quite consciously and deliberately, not by mistake, that I am thinking of the trained observer. The kind of "datum" I have in mind is the kind which constitutes the outcome of an experiment, say in physics. We have reason to expect *this* or *that; this* happens. Then *this* is what I call datum. The fact that *this* has happened is a premiss in the reasoning of the man of science; it is not deduced, but simply observed. The state of mind that I am imagining in investigating the problem of the physical world is not a naïve state of mind, but one of Cartesian doubt.

The confusion between the two kinds of primitiveness[1] is not

[1] When Professor Dewey speaks (p. 406) of "Russell's trusting confidence in 'atomic' propositions as psychological primitives," he is imagining that I mean one sort of primitiveness when in fact I mean another. I mean what would be a premiss to a careful man of science, not what is a premiss to a baby or a gorilla.

always easy to avoid. In those whose knowledge has not reached a high level of logical articulation, there will be comparatively little that is logically derivative. The habit of reasoning and inferring and binding together different pieces of knowledge into a single logical system increases the proportion of logically derivative knowledge, and the deductive weight that has to be supported by what remains logically primitive. One thing that makes the problem exceedingly confusing is that even what we are calling the *logical* articulation of a man's knowledge is still a question of psychology, in part at least. If a man believes two propositions p and q, and if p implies q though he has never noticed this fact, then p and q are separate pieces of his knowledge, though not separate in abstract logic. The logical articulation of a man's knowledge is subject to restrictions imposed by logic, since we shall not regard one part of his knowledge as logically derivative in relation to another unless it is logically inferable, as well as psychologically inferred by him; but although logic thus enters in as controlling the possible articulations of a man's knowledge, logic alone can not determine them, and his individual psychology is required in addition in order to fix the actual logical order among his beliefs.

We have thus three different problems, one of pure psychology, one of mixed psychology and logic, and one of pure logic. We may illustrate the three problems by means of the science of physics.

1. The problem of pure psychology is this: How do we, as a matter of history, come by the beliefs we have about material objects? What earlier beliefs preceded those which we now entertain, either in the individual or in the race? What vaguer state than "belief" precedes the growth of even the earliest beliefs? And what vaguer objects than those presented to a trained observation are to be found in a less sophisticated experience? All these are questions of psychology. They are questions which I, for my part, have not attempted to discuss. Nothing that I have said on the problem of the external world is intended to be applicable to them.

2. The problem of mixed psychology and logic is this: How do we, ordinary persons with a working knowledge of physics, organize our physical beliefs from a logical point of view? What, if we are challenged, and an attempt is made to make us doubt the truth of physics, shall we fall back upon as giving a basis for our belief which we are not prepared to abandon? Take, say, the facts out of which modern physics grew: Galileo's observations on falling bodies. We have in Galileo's work a mixture of argument, inference, mathematics, with something else which is not argued or inferred, but observed. For him, this something else constituted part of what was logically primitive. To those who are troubled by skepticism, the

discovery of what is logically primitive in their own beliefs (or half-beliefs) appears important as a possible help in deciding as to their truth or falsehood. We will call the primitive in this sense the "epistemological primitive." It is the primitive in this sense that I mean when I speak of "data." I agree entirely with Professor Dewey when he says (p. 428): "To make sure that a given fact *is* just and such a shade of red is, one may say, a final triumph of scientific method;" but when he goes on to say: "To turn, around and treat it as something naturally or psychologically given is a monstrous superstition," we shall no longer agree if we are speaking of "data" in the sense of "epistemological primitives" rather than temporal primitives.

3. In addition to these, there is, or may be, a third kind of primitive, namely, the *pure* logical primitive. This, when it can be defined, can only be defined by logical simplicity or deductive power. A deductive system is preferable when its premisses are few and simple than when they are many and complicated, but this seems to be mainly an esthetic question. There is, however, something beyond this in logical simplicity. The law of gravitation, for example, implies Kepler's three laws, and much besides; in this sense, as a premiss, it is logically preferable to them. Although, often, in a deductive system, there will be a certain element of arbitrariness in the choice of premisses, yet the arbitrariness is restricted: there will be, usually, a fairly small collection of propositions from among which it is clear that the logical premisses should be chosen. And the more advanced the logical organization of the system, the more restricted will be the choice of premisses. But this sense of "primitive" does not enter into inquiries of which the purpose is to find out whether the grounds for believing some body of scientific propositions are sufficient. In such inquiries, it is the second sense of "primitive," the epistemological sense, that is important. The pure psychological and the pure logical are alike irrelevant. And it is in the second sense that I speak of "data" in discussing the problem of the external world. As an example of the search for the logical primitive in physics, we may take Herz's *Principien der Mechanik*. In this book the author is not concerned to persuade us that physics is true, but to find the best way of stating premisses from which physics (supposed known) can be deduced.

There is a problem as regards the comparative merit of the differing psychological data at various levels. The common-sense view is that greater discrimination and more analytic observation yield more knowledge. It is supposed that we know more about an object which we have inspected closely, with attention to parts and differentiation, than about an object of which we have only

what is called a "general impression." The successes of science, whose observation of facts is highly analytic, have confirmed the view that observation of this sort yields the most information. But as against this common-sense view we have a sort of artificially archaistic view, which opposes analysis, believes in a faculty of "intuition" possessed by peasant women, dogs, and ichneumon wasps, loves savage religions, and maintains that the progress of intellect has driven wisdom away from almost all men except the few immovable philosophers among whom intellect has not progressed. Those who adopt this artificially archaistic view believe that the large confused data spoken of by James (in the seventh of our above quotations) have more capacity for revealing truth than is to be found in scientific observations. I do not think that Professor Dewey belongs to those who take this view. Accordingly he does not regard the vaguer data as giving more knowledge than those that are more analyzed. But there are aspects of his theories which might mistakenly suggest that he took this view.

I do not wish, at the moment, to consider Professor Dewey's views so much as to consider the problem in itself. The problem concerned is what we may call the problem of "vagueness." It may be illustrated by what occurs while we watch a man walking towards us on a long straight road. At first we see only a vague dot; we can not tell whether it is moving; we only guess that it is a human being because it seems about the right size. Gradually it passes through various grades of growing distinctness: we recognize it as so-and-so, and at last we see what sort of expression he has on his face, and whether he looks well or ill. In this case, it is clear that the more analyzed apprehension enables us to know more. We can more or less infer what a man would look like a long way off when we see him near at hand; but the converse inference is much more circumscribed. Now although, in the case of the man approaching along a road, our attention remains throughout equally analytic in character, and the changes that occur are due merely to the fact that the object comes nearer, yet I think that there is a close analogy between the quick changes in this case and the slow changes in the case of increasing powers of analytic attention. In these changes also, I think, what happens is that more differentiations exist in the new datum, and that the new datum allows more inferences than the old one. At the same time, as in the case of the man approaching, what (to save trouble) we may call the same physical object gradually comes to occupy a larger portion of the field of attention, so that, although more is known about an object which remains within the field of attention, there are fewer such objects at any one time. A man who is reading sees differences on the

printed page which are probably more minute than any that a dog ever sees, but while he is seeing them he may miss other things which the dog would never miss, for instance a person speaking to him. There seems no reason to reject the common-sense view that, through trained attention, we acquire more knowledge about the things we attend to, but become more restricted as regards the area of attention.

Following the analogy of the man on the road, whom I will now suppose seen simultaneously by a number of people at different distances, I suggest that it is possible, theoretically at least, to distinguish elements, in the perceptions of all these people, which are correlated and may be called perceptions "of" the one man. For the moment I do not wish to go into the meaning of this "of"; it is enough that these elements are correlated in the way that leads to their being said to be "of" one object. It is not necessary that the element which is a perception of the man in question should be consciously isolated and attended to by the person who has it: it is enough that it occurs, regardless of whether anybody knows that it does. (But of course the hypothesis that it sometimes occurs without anybody's knowing is based upon what *is* known.) Now among the correlated occurrences which we call perceptions of the one man, some allow more inference as to the others and some less. Those that allow less we will define as "vaguer;" those that allow more, as "less vague." Those that are less vague are more differentiated: they consist of more parts. In a very vague perception of the man, he is an undifferentiated dot. In a still vaguer perception, the whole man may be absorbed into the smallest discriminated element: we may see a distant regiment as a speck, without being able to distinguish its component men. In all this, I am accepting common sense. It may be necessary to abandon common sense on some points, but in all that concerns vagueness what I wish to maintain is in the closest agreement with common sense.

We may lay down the following common-sense propositions. (1) All that we learn through the senses is more or less vague. (2) What we learn by careful analytic attention of the scientific kind is less vague than what we learn by causal untrained attention; what we learn by seeing things close at hand is less vague than what we learn by seeing them at a distance. (3) Even the vaguest perception has *some* value for purposes of inference, but the vaguer it is the smaller becomes its value for inference. From these characteristics we may advance to those implied in the above definition of vagueness. The inferences drawn from what we perceive (or the

expectations aroused) are motived by habitual correlations.[2] And the correlations of this sort (*e. g.*, those between what are called appearances of a given object at different distances) are many-one correlations: many different appearances near-to will all correspond to the same appearance further off. Wherever we have a many-one correlation, the "one" can be inferred from any of the "many," but not vice versa; we have the "one" determined by any of the "many" but not any of the "many" by the "one." It seems to me that the vague data of unanalytic attention are just as "true" as the more precise data of trained observation, but allow fewer inferences. We might illustrate the matter by an analogy. If you are told that a man is descended from Adam, that gives you the vaguest possible information as to his ancestry; if you are told that he is descended from William the Conqueror, that is still pretty vague; but as the generations grow later, the information that a man is descended from so-and-so becomes more and more significant. The reason is that the relation of son to father is many-one: when you are told that *B* is a son of *A*, and *Z* is descended from *B*, you can infer that *Z* is descended from *A;* but when you are told that *Z* is descended from *A,* you can not infer that he is descended from *B,* because he may be descended from one of *A*'s other children. So it is with correlated perceptions: the vaguer correspond to the earlier generations and the more precise to the later. But of course in the case of perceptions there is possible continuity instead of the discreteness of generations.

I claim for the above view of the relation between psychologically primitive data and the precise data of science various merits which, as I shall try to show, do not seem to be possessed by Professor Dewey's theory.

(*a*) The transition, as we have been explaining it, is a continuous one, and is one not having a terminus in either direction. No perception can be so precise as to be incapable of greater precision—unless, indeed, we were to accept, in regard to all physical things, the theory of *quanta,* and hold that all physical quantities are discrete, in which case there would be a theoretical limit of complete exactitude, though of course far below the threshold of our perceptions. And at the other end of the scale, no perception can be so vague as to be incapable of greater vagueness, unless, indeed, the world appeared always just the same whatever the environment might be. Perhaps absence of life might consist in this absolute vagueness; but where there is life, even so low in the scale as the amoeba, an environment which contains food will seem different from one

[2] These inferences are not logically cogent, and are sometimes mistaken, but that is a point that need not concern us at this moment.

which does not (to judge by behavior), and will therefore be perceived with less than the maximum of vagueness.

(*b*) Another advantage of our definition and theory is that it allows *some* inferential value to even very vague data. It does not have to say: The precise observation of the scientist gives truth, and the vague feeling of the infant gives error. Still less does it have to say the opposite. Assuming a common-sense world, and leaving aside all doubts as to causality, induction, *etc.*, our perceptions always give tolerable ground for *some* expectation or inference; but though the vaguer perceptions may give inferences which (in some sense) cover a wider field, the more precise perceptions allow more inferences within the field they cover. That is to say, suppose what is originally one vague object of attention A (a crowd, say) is correlated with what are later ten more precise objects of attention (ten men, say), then regarding any one of these ten (Z, say) the system of its correlates can be better known when Z is perceived than it could when only A was perceived.

(*c*) Connected with this is one of the great merits of our theory: namely, that it does not involve an Unknowable, either at the beginning or at the end, because the differences involved are differences of degree, and it is not necessary to assume the existence of an unattainable limit in either direction. There will doubtless be degrees that are *unknown*, but that is a different matter from having to declare them *unknowable*. Any one of them might become known at any moment. The case is analogous to that of a large finite integer which no one has ever happened to think of: any one *might* think of it any moment. In like manner any degree of vagueness or exactitude might be attained, and there is no need to suppose that there is such a thing as an absolute exactitude, which would be unattainable.

There are, not unconnected with our last point, certain other questions which, to my mind, raise difficulties as to Professor Dewey's instrumentalism. It would seem to follow from what he says that, although we can know that there are crude data, yet we can never know any particular crude datum, because objects of *knowledge* have to be objects of a certain kind, and crude data are not of this kind. Now I do not say that such a view is impossible, but I do say that it is difficult, and that, before it can be accepted, something must be done to show that the difficulties are not insurmountable. This brings us, however, to a general discussion of what Professor Dewey calls "instrumentalism."[3]

[3] I leave on one side, for the present, the question raised in the fourth and fifth of the quotations with which we began this section, namely, the question whether sensations and perceptions are cases of knowledge. I do not myself

II. Instrumentalism

The theory which Professor Dewey calls instrumentalism is a form of pragmatism, but (as appears by the twelfth essay, on "What Pragmatism Means by Practical") it is a pragmatism which is not intended to be used for the support of ancient superstitions or for bolstering up common prejudices. Some quotations, again, will serve to state the position which he advocates.

1. "If we exclude acting upon the idea, no conceivable amount or kind of intellectualistic procedure can confirm or confute an idea, or throw any light upon its validity" (p. 240).

2. "Instrumentalism means a behaviorist theory of thinking and knowing. It means that knowing is literally something which we do; that analysis is ultimately physical and active; that meanings in their logical quality are standpoints, attitudes, and methods of behaving towards facts, and that active experimentation is essential to verification" (pp. 331–332).

3. "The thesis of the essays is that thinking is instrumental to a control of the environment, a control effected through acts which would not be undertaken without the prior resolution of a complex situation into assured elements and an accompanying projection of possibilities—without, that is to say, thinking. Such an instrumentalism seems to analytic realism but a variant of idealism. For it asserts that processes of reflective inquiry play a part in shaping the objects—namely, terms and propositions—which constitute the bodies of scientific knowledge. Now it must not only be admitted but proclaimed that the doctrine of the essays holds that intelligence is not an otiose affair, nor yet a mere preliminary to a spectator-like apprehension of terms and propositions. In so far as it is idealistic to hold that objects of knowledge *in their capacity of distinctive objects of knowledge* are determined by intelligence, it is idealistic" (p. 30).

4. "Again, the question may be asked: Since instrumentalism admits that the table is really 'there,' why make such a fuss about whether it is there as a means or as an object of knowledge? . . . Respect for knowledge and its object is the ground for insisting upon the distinction. The object of knowledge is, so to speak, a more dignified, a more complete, sufficient, and self-sufficing thing than any datum can be. To transfer the traits of the object as known to the datum of reaching it, is a material, not a merely verbal affair" (pp. 44–45).

The view of Professor Dewey, if I understand him rightly, might be restated roughly as follows: The essence of knowledge is *inference* (p. 259), which consists in passing from objects present to others not now present. In order that this may be possible, one of the essentials is that the material originally given should be so shaped as to become an available tool for inference. After this shaping, it becomes what *science* calls a datum; it is then something different from what was there before. The essence of a belief is the behavior which exemplifies it (which *is* it, one is tempted to say); this behavior is such as is intended to achieve a certain end, and the

believe that this question is of great importance to the issue between him and me. I shall return to this topic briefly at a later stage.

belief is shown in the behavior adopted for that purpose. The belief is called *true* when the behavior which exemplifies it achieves its end, and false when it does not—omitting refinements due to cooperation of different beliefs. Knowledge is like a railway journey: it is a humanly constructed means of moving from place to place, and its matter, like the rails, is as much a human product as the rest of it, though dependent upon a crude ore which, in its unmanufactured state, would be as useless to intellectual locomotion as iron ore to locomotion by train.

There is a great deal that is attractive in this theory. I am not prepared dogmatically to deny its truth, at any rate in great part. But there are some problems which it *seems* to be unable to deal with.

First and foremost, we have the problem of the crude datum. The crude datum, in Professor Dewey's view—the "large but confused" original datum of William James—is something which lies outside knowledge. This has to do with the other thesis, exemplified in the fourth and fifth quotations of our previous section, that sensations and perceptions are not cases of knowledge, but inference alone is a case of knowledge. This, further, has to do with the practical bias—the view that knowledge must be treated as a means to something else. It is true, I think, that as a help in practical life the sort of knowledge we need is the sort that embodies or suggests inference. We want to know what will help or hinder, which is always a question of inference in a behaviorist sense. And here, further, if we are to take behaviorism seriously, we must contend, for example that a man or animal who eats something believes (unless he is tired of life) that it is nourishing food, however little he may reflect —for he has adopted the behavior appropriate to that belief, and belief must not depend for its existence upon anything except behavior. Thus in every case of eating there will be a case of inference. But the sort of knowledge that would be called "contemplation" has to be abandoned on this view.

Let us develop the point of view which is suggested, rather than fully stated, by Professor Dewey. It might with advantage, I think, be brought into connection with the thesis which the "neutral monists" have taken over from William James, that there is no such thing as "consciousness," and that what are called the mental and the physical are composed of the same material. It is not difficult to make sensation and perception fit into this view, by means of the thesis, urged in some of the above quotations, that they are not cases of knowledge at all. It is more difficult to fit in judgment and inference. But judgment is practically denied by Professor Dewey, as something distinct from inference; and inference is interpreted on behavioristic lines. Interpreting him, we might say: "Inference

is behavior caused by an object A and appropriate if A is succeeded or accompanied by B." I do not say that this definition would be accepted: it is schematic, and artificially simplified, but it may serve to exemplify the theory we are examining. We thus arrive at some such picture as the following: Man, an animal struggling for self-preservation in a difficult environment, has learned to behave towards objects as "signs"—a practise which exists also among other animals, but in less developed forms. An object which is not in itself either useful or harmful may come to be a "sign" of something useful or harmful which is frequently found in its neighborhood, that is to say, it may come to promote behavior appropriate to that of which it is a sign, rather than to itself. Such behavior may be said to embody inference, or the "knowledge" that the object in question is a sign of the inferred object. Objects which are useful as signs acquire a special interest, and it is an essential part of the business of science to perfect the manufacture of such objects out of the material presented in nature. Such, it seems to me, is Professor Dewey's theory in outline.

I do not wish to maintain that this theory is false; I wish only to suggest that the reasons for thinking it true are far from adequate.

The first criticism that naturally occurs to any one who has endeavored to ascertain the truth about causality is, that the theory is amazingly light-hearted in its assumption of knowledge as to causality.[4] The writings of Hume, I know, are inconvenient. There are two recognized methods of dealing with what he has to say on Cause: one is to maintain that Kant answered him, the other is to preserve silence on the matter. I do not know which of these is the more inadequate. The second is the one adopted by Professor Dewey (in common with other pragmatists). His conception of signs and inference, his whole notion of knowledge as instrumental, depends throughout upon acceptance of the ordinary common-sense view of causation. I do not wish to be misunderstood in this criticism. I am willing to believe that there may be a great measure of truth in the common-sense view of causation, and I am incapable of saying or writing much without assuming it, at least verbally. The point is not that this view must be false, but that, for instrumentalism, it must be *known* to be true. We must actually know particular causal laws. Our beliefs will be beliefs in causal laws, and we must know what effects are caused by our beliefs, since this is the test of their value as instruments. The very conception of an "instru-

[4] "The term 'pragmatic' means only the rule of referring all thinking, all reflective considerations, to *consequences* for final meaning and test" (p. 330). "Consequences" is a causal word.

ment'' is unintelligible otherwise. For those who are troubled by Hume's arguments, this bland ignoring of them is a difficulty, suggesting, at least, that a good deal of re-statement and further analysis is necessary before instrumentalism can take its place among articulate possible philosophies.

The second criticism which occurs to me is closely allied to the first. It is, that Professor Dewey ignores all fundamental skepticism. To those who are troubled by the question: ''Is knowledge possible at all?'' he has nothing to say. Probably such a question would appear to him otiose; he would argue (no doubt justly) that to a *fundamental* skepticism there can be no answer except a practical one. Nevertheless, a theory of knowledge should have more to say on the matter than he has to say. There are different levels of skepticism; there are popular prejudices which are easily dissolved by a little reflection, there are beliefs which we can just succeed in feeling to be doubtful by prolonged destructive analysis (such as the law of causation for example), and there are beliefs which it is practically impossible to doubt for more than a moment, such as the elementary propositions of arithmetic. But the beliefs which are epistemologically primitive in Professor Dewey's system will have to involve propositions which even the most hardened anti-skeptic could be made to doubt without much trouble. For, if the truth of a belief is proved by its being a good instrument, we have to know what effects the belief has, what effects other beliefs would have had, and which are better. This sort of knowledge is surely about as doubtful as any that would ever be called knowledge. We also assume to begin with, in Professor Dewey's system, the whole of what is involved in the biological position of man: the environment, the struggle for existence, and so on. Thus our theory of knowledge begins only after we have assumed as much as amounts practically to a complete metaphysic.

This might be admitted, since Professor Dewey considers that ''theory of knowledge,'' as a subject, is a mistake. I suppose he would say, what I should agree to in a certain fundamental sense, that knowledge must be accepted as a fact, and can not be proved from outside. I find, however, both in this respect and as regards data, an insufficient realization of the importance of degrees and continuous transitions. The passage from crude data to the most refined data of science must be continuous, with truth at every stage, but *more* truth in the later stages. So there is a gradation of truths; and similarly there is a gradation of beliefs, a continuous passage from what we feel to be very uncertain up to what we can not doubt, with some degree of belief at each stage, but more at the later stages. And theory of knowledge exists as a subject which en-

deavors to organize our beliefs according to the degree of conviction, and to attach as many as possible to those that have a high degree of conviction. If it be asked: "Is a belief of which I feel strong conviction more likely to be true than one of which I feel a good deal of doubt?" we can only answer that, *ex hypothesi,* we *think* it more likely to be true. And there is no miracle by which we can jump outside the circle of what we *think* to be true into the region of what *is* true whether we think so or not.

Professor Dewey, in an admirable passage, points out the effect of bias in forming the theories of philosophers. He says:

> "It is an old story that philosophers, in common with theologians and social theorists, are as sure that personal habits and interests shape their opponents' doctrines as they are that their own beliefs are 'absolutely' universal and objective in quality. Hence arises that dishonesty, that insincerity characteristic of philosophic discussion. . . . Now the moment the complicity of the personal factor in our philosophic valuations is recognized, is recognized fully, frankly, and generally, that moment a new era in philosophy will begin. . . . So long as we ignore this factor, its deeds will be largely evil, not because *it* is evil, but because, flourishing in the dark, it is without responsibility and without check. The only way to control it is by recognizing it" (pp. 326–7).

These are very wise words. In spite of the risk, I propose to take the advice, and set down, as far as I can, the personal motives which make me like or dislike different aspects of behaviorism and instrumentalism, *i. e.,* motives which would make me *wish* them to be true or false.

I have a strong bias in favor of the view, urged by James and most American realists, that the mental and the physical are merely different arrangements of the same stuff, because this (like every other application of Occam's razor) gives opportunities for those logical constructions in which I take pleasure. I tried (in my *External World*) to show how the particulars that (in my view) make up the stuff of the world are capable of a two-fold classification, one as physical things, the other as biographies or monads, or parts of monads. Such logical constructions I find enjoyable. Desire for enjoyment of this sort is a creative bias in my philosophy—*i. e.,* what Kant (less self-consciously) would call a regulative idea of reason. The same bias makes me like behaviorism, since it would enable me to define a belief as a certain series of acts. An act inspired by two beliefs would be a member of the two series which would be the respective beliefs. In this definition I find, further, a good-natured malicious pleasure in thinking that even the theories conceived by those who hate mathematical logic can be taken over and stated in such terms as will make them repulsive to their own parents. I recognize that this is a shameful motive, but it does not

cease to operate on that account. All these motives combine to make me like behaviorism and neutral monism, and to search for reasons in their favor.

My bias as regards instrumentalism and pragmatism is quite different. Often (though not in Professor Dewey) pragmatism is connected with what I regard as theological superstition, and with the habit of accepting beliefs because they are pleasant. Some ascetic instinct makes me desire that a portion, at least, of my beliefs should be of the nature of a hair shirt; and, as is natural to an ascetic, I incline to condemn the will-to-believers as voluptuaries. But these feelings are not roused in me by the pragmatism which is advocated in this book: on the contrary, the very genuine scientific temper in the book appeals to me. Nevertheless there is a profound instinct in me which is repelled by instrumentalism: the instinct of contemplation, and of escape from one's own personality.

Professor Dewey has nothing but contempt for the conception of knowledge as contemplation. He is full of that democratic philanthropy which makes him impatient of what seems to him a form of selfish idleness. He speaks of

> "that other great rupture of continuity which analytic realism would maintain: that between the world and the knower as something outside of it, engaged in an otiose contemplative survey of it. I can understand the social conditions which generated this conception of an aloof knower. I can see how it protected the growth of responsible inquiry which takes effect in change of the environment, by cultivating a sense of the innocuousness of knowing, and thus lulling to sleep the animosity of those who, being in control, had no desire to permit reflection which had practical import . . ." (pp. 72–3).

and so on, and so on.

Will the present amusing inappropriateness of these remarks to the case of one at least among analytic realists suggest to Professor Dewey that perhaps he has somewhat misunderstood the ideal of contemplation? It is not essential to this ideal that contemplation should remain without effect on action. But those to whom contemplative knowledge appears a valuable ideal find in the practise of it the same kind of thing that some have found in religion: they find something that, besides being valuable on its own account, seems capable of purifying and elevating practise, making its aims larger and more generous, its disappointments less crushing, and its triumphs less intoxicating. In order to have these effects, contemplation must be for its own sake, not for the sake of the effects: for it is the very contrast between action and pure contemplation that gives rise to the effects. William James in his *Psychology* urges (if I remember right) that when a man has been enjoying music he should show how he has benefited by being kind to his aunt; but

the man who could not appreciate music apart from its effect on conduct would never be enough stirred by it to have his conduct improved, and would be just as unkind to his aunt after a concert as at other times. The habit of making everything subservient to practise is one which takes the color out of life, and removes most of the incentives to practise of a really noble kind.

Escape from one's own personality is something which has been desired by the mystics of all ages, and in one way or another by all in whom ardent imagination has been a dominant force. It is, of course, a matter of degree: complete escape is impossible, but some degree of escape is possible, and knowledge is one of the gateways into the world of freedom. Instrumentalism does its best to shut this gateway. The world which it allows us to know is man-made, like the scenery on the Underground: there are bricks and platforms and trains and lights and advertisements, but the sun and stars, the rain and the dew and the sea, are no longer there—sometimes we seem to catch a glimpse of them, but that is a mistake, we only see a picture made by some human being as an advertisement. It is a safe and comfortable world: we know how the trains will move, since we laid down the rails for them. If you find it a little dull, you are suffering from the "genteel tradition," you belong to an "upper" class given to a detached and parasitic life (p. 72). I have now expressed my bias as regards the view that we are not free to know anything but what our own hands have fashioned.

III. The External World as a Problem

I come now to the defense of certain views of my own against the criticisms of Professor Dewey, especially as contained in the eleventh essay, on "The Existence of the World as a Logical Problem."

A great deal of what is said in this essay depends upon the misunderstanding as to the sense in which I use "data," which we have already discussed. For example, on p. 290 ff., I am criticized for taking as "really known" (when we observe a table from different points of view) a set of facts which are complicated, involving series and logical correlations. Now such criticism all rests upon the supposition that what is "really known" is intended to be something which is believed at an earlier time than what is (if possible) to be proved by its means. This is not how I conceive the problem. I find myself, when I begin reflecting on the external world, full of hitherto unquestioned assumptions, for many of which I quickly realize that I have as yet no adequate reason. The question then arises: what sort of reason could I hope to discover? What, apart

from argument and inference, shall I find surviving a critical scrutiny? And what inferences will then be possible? I give the name "data" or rather "hard data" to all that survives the most severe critical scrutiny of which I am capable, excluding what, *after the scrutiny,* is only arrived at by argument and inference. There is always much argument and inference in reaching the epistemological premisses of any part of our knowledge, but when we have completed the logical articulation of our knowledge the arguments by which we reached the premisses fall away.

The chief thing that I wish to make clear is that, in discussing the world as a logical problem, I am dealing in a scientific spirit with a genuine scientific question, in fact a question of physics. Professor Dewey, almost wilfully as it seems, refuses to perceive the question I am discussing, and points out the irrelevance of what I say to all sorts of other questions. It is perfectly clear that, starting from a common-sense basis, what a physicist believes himself to know is based partly upon observation and partly upon inference. It is also clear that what we *think* we observe is usually much more than what, after closer attention and more analysis, we find we really did observe—because habitual inferences become unintentionally mixed up with what was actually observed. Thus the conception of a "datum" becomes, as it were, a limiting conception of what we may call scientific common-sense. The more skilled an observer has become, the more what he thinks he has observed will approximate to what I should call a "datum." In all this, we are proceeding along ordinary scientific lines. And the utility of such analytic data for inference is fully recognized by Professor Dewey. But he is continually misled by the recurrent belief that I must be speaking about beliefs that are early in time, either in the history of the individual or in that of the race. However, I have said enough already on this aspect of the question.

A phrase about "our own" data leads to the question: "Who are the 'we,' and what does 'own' mean?" (p. 282 *n*). The answer to this is that it is quite unnecessary to have any idea what these terms mean. The problem with which I am concerned is this: Enumerate particulars in the world and facts about the world as long as you can; reject what you feel to be doubtful; eliminate what you see to be inferred. There then remains a residuum, which we may call "data." The outsider may define this residuum as "your" data—but to you they are not *defined* in their totality, they are merely enumerated: they are a certain collection of particulars and facts, and they are the total store from which, at the moment, you can draw your knowledge of the world. Then the question arises: what inferences are justified by this store of par-

ticulars and facts? This is a perfectly genuine problem. It is no use to find fault with me on the ground that my problem is not some other, which is more interesting to Professor Dewey, and which I am supposed to be intending to attack in a muddle-headed way. And it is no use to shut one's eyes to my problem on the ground that it may be inconvenient. Every philosophy has been invented to solve some one problem, and is incapable of dealing with many others; hence every philosophy is compelled to be blind to all problems except its own. It is time that philosophers learned more toleration of each other's problems.

Some of Professor Dewey's criticisms are so easily answered that I feel he must have found my views extraordinarily distasteful or he would never have made objections with so little cogency. Take, *e. g.*, the contention that it is a mistake to call color "visual" or sound "auditory" until we know that they are connected with eye and ear respectively. The answer is, that, quite apart from physiology, objects which (as we say) are "seen" have a common quality which enables us to distinguish them from objects "heard." We do not need to experiment by shutting the eyes and stopping the ears in order to find out whether the sense-datum of the moment is "visual" or "auditory:" we know this by its intrinsic quality. When I speak of "visual sense-data," I mean colors and shapes, and it is not the least necessary to know that it is through the eye that I become acquainted with them. Another very feeble argument is the objection (p. 285 *n*) to my calling certain things "self-evident" on the ground that a thing can not offer evidence for itself. This is not what is meant by "self-evident." What is meant is "known otherwise than by inference." Professor Dewey's contention almost suggests a quibble à la Plato to prove that no man can be self-taught, because we can only teach what we know and learn what we do not know, and therefore it is impossible that teacher and learner should be one and the same. But this is not the type of argument that Professor Dewey would wish to be caught using.

Another source of confusion in Professor Dewey's arguments is that he is apparently unaware of the distinction that I draw between the universal "red" and particulars which are instances of it.[5] I dare say this distinction may be mistaken, but it is in any case an essential part of my theory, and I can not be refuted by arguments which ignore it. This applies particularly to the paragraph on p. 288 beginning, "If anything is an eternal essence, it is surely such a thing as color taken by itself, as by definition it must be taken in the statement of the question by Mr. Russell. Anything

[5] See "On the Relations of Universals and Particulars," *Proc. Arist. Soc.*, 1911–1912.

more simple, timeless, and absolute than a red can hardly be thought of." And at the end of the same paragraph another even larger question is raised, namely that of the temporal position of a simple particular. In the case which I am supposing, we are told, "we are dealing in the case of the colored surface with an ultimate, simple datum. It can have no implications beyond itself, no concealed dependencies. How then can its existence, even if its perception be but momentary, raise a question of 'other times' at all?" (p. 289). One might retort simply by a *tu quoque:* tell us, one might say, what is your way of reaching other times? One might reply that it is of the very essence of my theory that the datum is usually *not* simple—that it is a fact, and facts are not simple (statements both noted by Professor Dewey, but supposed to constitute an inconsistency). One might point out that Professor Dewey, repeatedly, shows that he has failed to take account of the analysis of the time-order suggested both in Chapter IV of the book he is discussing and in the *Monist* for 1915—an analysis which, right or wrong, demands discussion in this connection. But the chief thing to point out is that, in the problem in question, we are up against the very question of causality and knowledge of the future, which, so far as I can discover, Professor Dewey has never faced.

After a description of the kind of world which I accept as datum, the essay proceeds (p. 292): "How this differs from the external world of common sense I am totally unable to see. It may not be a very big external world, but having begged a small external world, I do not see why one should be too squeamish about extending it over the edges." Now there are several points to be made in reply to this criticism: (1) as to what I mean by an "external" world; (2) in what sense the world I start from is "begged"; and (3) how this world that I start from differs from that of common sense.

1. The word "external" is perhaps an unfortunate one to have chosen, and the word "inferred" would have been better. Professor Dewey does not admit that we can be said to "know" what I call sense-data; according to him they simply occur. But this point, though he makes much of it, seems to me to make very little difference as regards our present question. He admits (pp. 259–260) that perceptions are the source of our knowledge of the world, and that is enough for my purposes. I am quite willing to concede, for the sake of argument, that perceptions are not cases of cognition; indeed my desire to accept neutral monism if possible gives me a bias in that direction. I see objections which I think he has not shown how to meet, but I am not at all sure that they can not be met. However that may be, Professor Dewey and I are at one in

regarding perceptions as affording data, *i. e.*, as giving the basis for our knowledge of the world. This is enough for the present; the question of the cognitive status of perceptions need not concern us.

Now it is a plain fact that what I see and hear has some relation to my knowledge which is not possessed by information obtained through historical or geographical reading. This is admitted, implicitly, by Professor Dewey in the passage just referred to. The words used for describing the difference are immaterial. When the difference is first noticed, it is vague and blurred, as is usually the case with newly cognized differences. Reflection tends to show that, as the difference comes to be drawn with more skill, less and less appears on the same side as what is seen and heard, and more and more appears on the same side as what we learn through reading. Nevertheless, if I am not mistaken, even the most rigid scrutiny will leave, on the same side with what is seen or heard, certain things remembered (with the fact that they are past), various observed relations (in part rather complicated), and some *a priori* knowledge—whether all of it logical or not, I do not know.

All this group of particulars and facts constitute what I call "data." They make up the world which I am intending to contrast with the "external" world. I do not wish spatial notions to obtrude: the world that I call "external" is so called only in this sense that it lies outside the group of data—"outside" in the logical sense. The problem that I wish to discuss is: "Can we make any valid inferences from data to non-data in the empirical world?" In the mathematical world we know that we can. Starting with a few numbers, we can infer other numbers *ad lib*. In the physical world, science and common sense believe that similar inferences are possible. Are they justified? If so, why? If we can not at present decide the question, can we see any way by which it *might* be decided? These problems are genuine, and no useful purpose is served by trying to evade them.

2. To say that I have "begged" a small external world is to miss the point. I have accepted it as datum, because that is the sort of world that, speaking empirically, seems to me, rightly or wrongly, to be given. Professor Dewey does not argue that this is not the case; he merely contends that it is not the world that is "given" in a different sense, *i. e.*, as I understand, given to babies, which is irrelevant. The "given" world that I am speaking of is that which is "given" to the most educated person to be found in the matter of physical observation and the distinguishing of observation from inference. If I have wrongly described the "given" world (in this sense), I am ready to amend the description. It makes very little difference to my problem what is the *detail* of the

description of the given world. If Professor Dewey will offer me an alternative (provided he will remember that it is not the *historical* primitive that I want), I make little doubt that the bulk of my argument will be able to adapt itself with little alteration. I have not "begged" my small external world any more than Columbus begged the West Indies; I have merely chronicled what I observe. I can not prove that it is there except by pointing to it, any more than Columbus could. But if others do not see what I point to, that does not prove that *I* do not observe it. There is no reason why what one person can observe should be also open to the observation of another. Nevertheless, to chronicle what one observes is not the same thing as to "beg" a world.

3. As to how my initial world of data differs from the world of common sense, there are various ways: (*a*) by extrusion of the notion of *substance,* since I do not consider a physical thing, such as a table, to be a datum at all, and I do consider that it is a series of classes of particulars, not a single particular. (I am not speaking of the fact that the table has physical parts: what I say would be equally true of an atom or electron, according to the theory). (*b*) Among *data* we can only include the existence of a particular during the time when it is a datum: its existence or non-existence before and after that time, if knowable at all, can only be known by inference. The things that Professor Dewey says on this subject (pp. 286–290) are only explicable to me by supposing that, when I speak of "inference to other times," he thinks that I mean inference to the existence of other times, whereas I mean inference to the existence-of-something-described at a time when something else is known to be existing. *E. g.,* I look out of the window and see, as we say, a tree; I look back to my book and see print. Can I know whether what I saw when I looked out of the window, or anything in any way correlated with it, exists while I am looking at my book? My world of data does not include anything which gives an answer to this, whether affirmative or negative; an answer will not be possible unless there are valid inferences from particulars at certain times to (described) particulars at certain other times. (*c*) In particular, my world of data does not include anything of other people except their outward show. In these and other ways it is very fragmentary as compared with the world of common sense.

Professor Dewey takes advantage (*e. g.,* p. 295) of occasions when, for the sake of brevity, I have adopted the language of common sense. To avoid this altogether would hardly be possible without adopting the language of mathematical logic. But there are hardly a dozen philosophers living who will take the trouble to read anything written in that language. And so long as one uses lan-

guage they will condescend to read, one is condemned to the vaguenesses, inaccuracies and ambiguities which keep philosophy alive.

There is much that, if space permitted, I should have wished to say on the subject of *time*. Meanwhile, I will conclude with the hope that the reader will perceive the reality of the problem which concerns me. There is a passage in the Essay we have been considering which seems to show why Professor Dewey and I have such difficulty in understanding one another. He says (p. 299): "No one can deny that inference from one thing to another is itself an empirical event, and that just as soon as such inference occurs, even in the simplest form of anticipation and prevision, a world exists like in kind to that of the adult." Certainly no one denies that inference is an empirical event. What is being examined is not its *occurrence,* but its *validity*. The above passage seems to suggest that if I infer a world, there is a world. Yet I am not the Creator. Not all my inferences and expectations could prevent the world from coming to an end to-night, if so it were to happen. I trace in the above quotation, as in much of what pragmatists write, that instinctive belief in the omnipotence of Man and the creative power of his beliefs which is perhaps natural in a young, growing, and prosperous country, where men's problems have been simpler than in Europe and usually soluble by energy alone. Dr. Schiller says that the external world was first discovered by a low marine animal whom he calls "Grumps," who swallowed a bit of rock that disagreed with him, and argued that he would not have given himself such a pain, and therefore there must be an external world. One is tempted to think that, at the time when Professor Dewey wrote, many people in the newer countries had not yet made the disagreeable experience which Grumps made. Meanwhile, whatever accusations pragmatists may bring, I shall continue to protest that it was not I who made the world.

BERTRAND RUSSELL

REVIEWS AND ABSTRACTS OF LITERATURE

Contributions to Psycho-Analysis. S. FERENCZI. Translation by ERNEST JONES. Boston: Richard G. Badger. 1916. Pp.———

These contributions, originally published in Hungarian and German in various journals by one of the best known and brilliant of Professor Freud's pupils, have been collected and translated by Dr. Ernest Jones in their present form. For one who has read many of the articles in the original one of the most poignant impressions is the joy to be derived from a translation in such excellent English