

Autobiography of C. Lloyd Morgan

Lloyd C. Morgan (1930)

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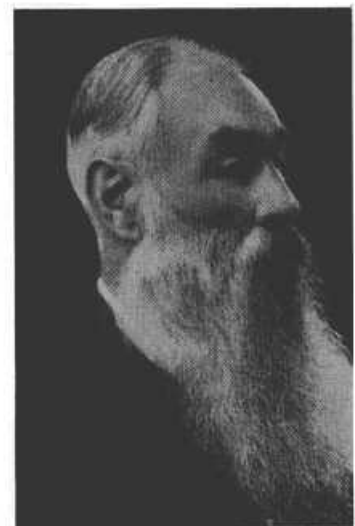
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I

How it came about that a kindly friend, the rector of our parish, thought it worth while to bid a school-boy in his 'teens to tackle Berkeley's *Principles* and earlier *Dialogues* was on this wise. I may have mentioned an incident at my grandfather's table, years before, when he gravely asserted that if the housekeeper, the cook, the errand boy, the shopman, and their maker, had not thought of sausages there would be no sausages for breakfast; and that if none of us saw them, smelled them, or tasted them, we should have no idea of there being such things as sausages. He then plied poor little me with puzzling questions, to my great discomfort. "I like to make the youngsters think," he would say on such occasions. And the autobiographical point is that he *did* make a youngster think.

Anyhow, in some such way as this, the good rector and I slid on to the topic. He, too, plied me with questions, sympathetically amused, no doubt, by my rather callow interest, very shallow knowledge, and quite confident, common-sense, Johnsonian attitude. Then he said: "Why not read Berkeley at first hand, just as you read Wordsworth or Shelley" (of whom we had been talking)! "Might it not be well to do so before expressing a third-hand opinion based on someone's second-hand rendering which, after all, shows only his reaction to the problem under discussion! Drink always at the fountain-head in matters in which you are really interested."



C. LLOYD MORGAN

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I did so; and this was my first-hand introduction to philosophy. I can date it as near the close of my school-days because I can picture myself sitting in the hedge-shade in a meadow near a bend of a familiar stream. Never mind rod and line and possible perch. Here was Berkeley (in blue-grey boards) teaching me to fish for ideas in the deeper waters of the mind.

And now, after more than sixty years, I ask: What was then *my* reaction to his teaching? I find it hard to say. My then-reaction is so colored by now-reaction that I cannot be sure what it then was.

Herein lies a difficulty in any autobiographical sketch which purports to deal with one's mental development. It is a story of oneself in the past, read in the light of one's present self. There is much supplementary inference -- often erroneous inference -- wherein [p. 238] "must have been" masquerades as 'was so.' The story is pretty sure to be too neat and trim.

When my school-days were over and I entered on a course of training in science, my kind monitor still urged me to keep this earlier interest alive, and sketched out a program of selected, but first-hand, reading. This led me back through Locke to Descartes, then onwards to Hume, and thence to some acquaintance with common-sense Reid. Spinoza and Leibnitz were subsequently intercalated. Kant was reserved for later on. Then go back to Plato and Aristotle. This was the program. And this, such as it was, constituted my avenue of approach to philosophical thought wholly outside the stimulating give-and-take of lectures and classroom discussion.

I need say little of my antecedent school-days -- just enough to show the direction of the educational wind-currents. My father, a Wykehamist, had sent my elder brother to Winchester; but, for reasons which form no part of this story, my lot was different. I was sent to a grammar school, not yet modernized but conducted on Winchester tradition by a Wykehamist as headmaster. Here Latin and Greek reigned supreme, with some mathematics, a little English history, and a very little (rather apologetic) French thrown in. I worked my way up through the school, and took third place on the list in the last examination.

To my modest introduction to the Classics under one who was accounted by my betters as a scholar, I owe much. My rather bored attitude in the lower school was insensibly transformed when I reached sixth-form status. I was led to feel that charm which supersedes drudgery and lies at the root of the matter.

For the rest, I stole time to read more English poetry than most boys -- ranging from Shelley, Keats, and Wordsworth, to Tommy Moore and the Ingoldsby Legends -- with a background of wonder as to how it is done; and with vain attempts to do likewise in juvenile verse. However poor and inadequate the outcome, an attempt myself 'to do likewise' is, I think, part of my mental make-up.

About a year before I left school the headmaster called me into his study after prayers. *The Idylls of the King* lay on the table. "Have you read this?" "Yes, sir." "Then read aloud to me one or two passages -- where you like." I did as I was told. "I thought so," he said, "from the way you recited that ode of Horace this [p. 239] morning. But let yourself go and don't be afraid of showing me how you like it. Be careful to give every syllable its full value, and give voice to the rhythm of thought, not only of words. You missed fire here and there; for example . . .," and he read me one of the passages so as to bring out meaning that had escaped me. "Well, my boy, would you care to repeat the dose?" Once a week during my last year the dose was repeated with widening range. And each Sunday evening he read me Keble's hymn from the *Christian Year*.

Such was the master; such the boy.

Apart from this inspiring mark of favor, more welcome than half a dozen prizes, what I have said of my school-days is so commonplace a sample of boy-life in hundreds of old-fashioned grammar schools in the sixties of last century that it is scarcely worthy of record, save insofar

as it goes to show that in school and out of school my early education was humanistic and literary.

I took my full share in games and athletics, and was a bit of a boy-naturalist, collecting most things, but with an itch to get at the "go" of them outside the cabinet shelf. Under the influence of an uncle, I was an observer of birds and learned something of their song-notes, plumage, and manner of life.

II

My school-days over, what next? To follow my brother to Oxford was ruled out of court. How about mining engineering as a profession! My father, a lawyer, was concerned in two or three mining companies and in touch with engineers. Why not go to the Royal School of Mines in London, as they advised? I was doubtful whether I had any bent that way. I really did not know what I wanted to do, or what good I was for anything. But it seemed better than an office stool as an alternative.

A trivial incident is here in place. It goes back to my school-days. I had laboriously trudged up the traditional pathway to mathematics. One Easter holiday an old friend of the family, a pretty high wrangler, asked me how I was getting on. "You have begun trigonometry, I hear. Would you like me to give you a little help?" Politely I replied: "Thank you very much," but with little gratitude at heart. "Come along then." He took me into his den. "This is a Gunter's quadrant. We may as well begin by measuring the height of the Araucaria on your father's lawn. Then with this [p. 240] surveyor's compass we'll make a scale plan of the garden" -- a large one and nowise formal. I gasped. 'Trig' had been for me so irretrievably booky and blackboardy.

In a few days I was as keen as mustard -- much to my friend's satisfaction. He had tapped the practical vein in me. "My dear boy," he said, "you'll never learn the good of anything --Gunter's quadrant or mathematics -- till you use it -- till you do something with it."

So when he was consulted with regard to my embarking on science as an avenue to a profession, he said: "By all means. He'll take to it as a duck takes to water." And, accordingly, in 1869 I entered on a full course leading up to the diploma or associateship in mining and metallurgy. Of this I need say little. I worked pretty hard and with zest; took such medals and a scholarship as lay *en route*; and was reckoned senior student at the finish.

But the scientific method, rather than its prospective application in a professional career, was what intrigued me. The practical vein was still there. Do something with it -- yes. But the top men in science used it for the advance of knowledge for its own sake.

Meanwhile, I kept close, though necessarily occasional, touch with Berkeley and Co., wondering how best I could square this new world of physical science with that old realm of philosophy, or whether I must choose between them, or perhaps keep them in separate mental compartments. Anyhow, the good old folk must be brought up to date in respect of their physical outlook. I made time to read all I could lay hands on that had bearing on the matter.

Naturally, I turned to Huxley, among others. In his *Lay Sermons* (1870), for example, there was much grist to my mill. The discourse on the "Physical Basis of Life" gave pause. Here was science, on the one hand, dealing with the how of events and, on the other hand, notions like 'aquosity' and 'vitality' posing as Causes of these events. Pressed home, was this distinction valid? Was all reference to Cause (in some sense) to be banned from the council-chamber of science? Then there was the Discourse on Descartes' "Method." In *Macmillan's Magazine* (1871) there was "Bishop Berkeley on the Metaphysics of Sensation." So much turned on physiology as an offshoot of physical science; and of this I knew nothing save at second-hand through reading. Just how did a science of mind link up with this science of the physical basis of mind? Mind, as such, [p. 241] seemed somehow to count in the course of human affairs. Did Huxley make clear to me the manner in which it does count? I was puzzled.

It so chanced that I was called on to take the chair at the second of a series of annual dinners for students and staff. I was honored by the support of Huxley on my right. He courteously sounded me on my aims and prospects. I then thanked him for what he had done for me and for others, touched on my interest in Berkeley, and lamented my ignorance of biology. In the intervals between speeches he returned to the topic; gave me of his riches without emphasizing my poverty. And, as he bade me a kindly 'Good-night,' suggested that, if it was possible, I might as well put in a year under him.

Shortly after this I had the opportunity of a three-months' trip to America, in the capacity of traveling tutor to a member of a wealthy family whom I was to meet in Chicago. I could take my young charge where I liked 'to see a bit of the world.' We cut across to Cairo on the Mississippi; went down the river to New Orleans; worked up to Washington through the Alleghanies; took leisurely ship from New York to Rio, calling at several of the West Indies, at Para, Bahia, and Pernambuco; spent a fortnight in Brazil, and thence returned to England.

It was an eye-opener. Apart from much else, the naturalist within me was stirred, with the *Naturalist's Voyage* at my elbow. And not only this. Here was the leisure seriously to tackle the *Origin of Species* and the *Descent of Man*. Yes; I must follow Huxley's advice when I got home if my good father would consent to keeping me on hand for another year or so. I knew something of physical science with my nose up against the facts which lay open to observation. I knew a little philosophy, though limited in range. I was so far a psychologist as to be constantly at work in the laboratory of my own mind. A plank in my platform was lacking -- some first-hand acquaintance with comparative anatomy and physiology.

So, on my return, I put in my year under the master with scarce other motive than to add this new plank to my platform of outlook on science and philosophy. Whatever else I might do or leave undone (after all this oddly arranged and academically unconventional preparation), it must still be my chief aim to broaden and deepen this outlook.[p. 242]

III

I am, as may already be obvious enough, unskilled in writing an autobiography of mental development. It is itself an exercise in psychology; but it here purports to show how the psychological attitude, as such, comes into my picture, and the bearing of 'other considerations' on that attitude.

When something stands out clearly in reminiscence, it calls, I take it, for autobiographical mention. It stands out clearly that, at the close of one of his lectures on physics (1870), Frederick Guthrie, in response to some question, gave me an offprint of W. K. Clifford's Royal Institution Discourse on "Theories of the Physical Forces." It called forth a strong reaction on my part.

"There are to be considered," he says near the outset, "two different answers to the question, 'What lies at the bottom of things?' The two answers correspond to two different ways of stating the question; namely, first, 'Why do things happen?' and, secondly, 'What is it precisely that does happen?'" He contended "that the first question is external to the province of science; but that the second is exactly the question to which science is always trying to find the answer." This was in line with Huxley's dismissal of 'aquosity' and 'vitality.'

Was it sound policy from the point of view of method? Could it consistently be carried out? If so, should it not be applicable in psychology no less than in physics? Was it so applied in current discussion of mental procedure? The policy had bearing on psychological interpretation.

In his lecture, Guthrie had said something about the different senses in which the word 'continuity' might be used, and referred to Clifford's illustration from the 'wheel of life,' the toy predecessor of the cinema show. Here what interested me was the interplay between the orderly 'jumps' in the zoetrope and the pretty smooth movement that I saw. No doubt there was some flicker. But might not that be because the wheel of life was too coarse-grained in its

jumpiness? When a disc with equal black and white sectors is more and more rapidly rotated there is a stage at which the jumps are so fine-grained that flicker quite disappears. And the light grey I then see may be matched with a pale grey on a still piece of paper. But is there jumpiness in this latter case? And, by simple inspection, can I tell whether I am looking through a tube at an isolated [p. 243] patch of a rotating disc or a patch of quiescent light grey paper? Can I say whether, at physical source, there is jumpiness or not? And so on. It seemed to me that events in the physical world might be jumpy or smooth-running; and that, on the basis of a simple inspection, it is hard to say which, so long as the jumps are fine-grained and orderly. But I could proceed on the hypothesis that they are all jumpy, or that they are all smooth-running, or that some are continuous (in this sense) and some discontinuous; and see how matters worked out. It seemed to me, however, that, on the jumpy hypothesis, my direct experience of coarse-grained jumps was itself jumpy; of very fine-grained jumps, smooth-running.

Turning, then, to the mental side of the account, Clifford told me that he had no doubt whatever that "the wheel of life is really an illustration and type of every moment of our existence." Did 'existence' here mean 'experience'? If so, all our apparently smooth-running experience is really jumpy, but so fine-grained as to be reckoned as smooth. Was this because the retina has discrete, and in that sense atomic, nerve-endings in the mosaic of rods and cones? Was the movement of the eyes in following a smooth-running billiard ball itself not smooth but step-like! If so, this was anatomical and physiological. Was it also mental as given in our conscious experience? I did not know and was puzzled.

Clifford then passed to the hypothesis of smooth continuity in the physical world. Here, though parts of the argument were beyond me, matters, on the whole, seemed pretty plain sailing. But I still in a more or less fumbling way wondered whether it showed that all physical events were so comprised. Was the passage from one physical 'state' to another, or from 'these' physical 'properties' to 'those,' fundamentally smooth -- a slide and not a step? The difference in structure and properties between chemical compounds and mechanical mixtures had been dinned into us. And it seemed to me that, taking them at their face-value, chemical events were relatively jumpy, whereas mechanical events were smooth-running, though both conform to a natural order. Clifford's argument applied to the latter. Did it apply to the former? If not, must we not reckon with physical events (in the broad sense of the word 'physical'), some of which are jumpy and some smooth-running? I was only a beginner and I could not answer this question. But I could ask it and meanwhile remain puzzled.[p. 244]

Let me repeat that I may be reading into the 'then' more definite puzzlement than there then was. And, no doubt, I here state it in terms more clear-cut than I should then have used. But, in however ill-defined a form, the kind of questions I have set down were then itching for answers. And I can now picture in imagery just where I sat or how I sought council from my 'Gunter's quadrant' friend, when I then tried to worry things out.

But is all this worth saying? It is for others to judge. Save under gentle editorial pressure, I should not be saying anything autobiographical. What then does it show? It shows that, if not in the foreground, still lurking in the background, was the question -- the old Berkeley question -- where and how does the mind come in? Thus far my bias was psychological. But thus far it was little more than a bias. It and the like show, too, thus early, some thirst for knowledge in itself and not only to the end of technical application. I kept steadily to the course of training duly prescribed. More and more, however, did the pure, rather than the technical, aspect of science, and its bearing on philosophical problems, appeal to me. That I suppose is why I chose the path of life I eventually followed.

For, when my year under Huxley was over, I stood at a parting of the ways. What next? Practice of the profession for which I held the requisite diplomas; or, in spite of my lack of specialization on any accredited line, to become a teacher -- one whose voice, as I hoped (greatly daring), might perchance carry beyond the walls of classroom or lecture theater.

That, however, was only a possibility in the future. I must put my prentice hand to the test, while I did some pot-boiling work as assayer for a mining company. I tried short courses of lectures to

see if I could hold an audience. I spent a year in part-time science teaching in a large private school. Then I got in the thin end of the wedge on my appointment as Lecturer in Physical Science, English Literature, and Constitutional History (all three, save the mark!) in the Diocesan College at Rondebosch near Cape Town. My chief work was with undergraduates in preparation for degrees in the Cape University.

Here I put in five years' service. Shortly after my return to England I joined, as Professor of Geology and Zoology, the small staff of University College, Bristol; saw, and perhaps (as a Principal for twenty-three years) contributed a little to the securing of a charter giving to Bristol university status; and stayed on till I was placed on the shelf of superannuation as Emeritus Professor of Psychology (1920).

IV

During my sojourn at the Cape (1878-1883), apart from my work as lecturer, which kept me pretty busy during term, I sought to set my house of thought in order.

First, there were Berkeley and Co. to be reckoned with in the light of further reading of what they had written and of what current scholarship was saying about them. What was their message to me? They were great architects in philosophy; and their material, from foundation to most elaborate facade, was ideas -- using this word in a comprehensive sense for anything we can experience or think about as objective under reference. Even "feelings" are objectified in the field of thought-reference. Some of these ideas are built up into what we distinguish as the external world, which we speak of as experienced or known; others are built up into minds as experiencing or knowing. But the former, no less than the latter, are, insofar as known, 'in mind' -- "by way of idea" as Berkeley put it. Therefore, said Berkeley, there is no physical world that has any existence save "by way of idea." That seemed to me to go beyond the evidence. There might be or there might not. It was open to me to accept either hypothesis, and to see how a constructive scheme works out. On evolutionary grounds, if no other, I believed, though I could not prove, that a physical world there is. But I agreed with Berkeley that, if not its *esse* (under hypothesis), still its *sic esse* (under acquaintance and knowledge) *est percipi*. In other words the physical world is a thought-construct plus the hypothesis that its *esse* is in some sense independent of its *sic esse*; and yet that they are in some way interdependent so that, in current phrase, the physical world is 'represented' in the mental realm of ideas.

I reverted to Locke and was up against primary and secondary qualities. The former were really in 'sensible objects' as part of their physical *esse*; the latter were imported by the mind as part of their mental *sic esse*. Even then I harbored suspicions -- little more than notes of interrogation -- that Locke had got primary and secondary [p. 245] wrong way up; that in my infant child, for example, secondary qualities *via sense ideas* (those of taste and color and the rest) come first, and that so-called primary qualities implied later mental importations involving spatial relations and so forth. It was, however, only a vague surmise to await further consideration when I had more facts to go on. In any case, I saw no escape from Berkeley's argument which led to the conclusion that, in mental regard, both alike fall under the heading of *sic esse*; that neither 'resembles,' though both 'represent,' the physical nature of things in themselves.

But then Reid bade me accept at its face value the direct deliverance of common sense which assured him that the rosebud out there continues to exist just as one sees it, whether one chances to see it or not. Of course, I had to admit that this was common belief with which everyone starts; and that things work out quite comfortably on this supposition. None the less, I mistrusted the 'intuition' on which it is said to be based. Was common-sense belief so simple an affair as Reid supposed it to be? Or was it a very complex affair, compounded of many coalescent factors which it is the task of analysis to disclose? I was beginning -- but only beginning -- to suspect that intuitions are always secondary and not primary, derivative and not original, compound and not elementary. Still, I realized that there is a problem. How comes it that a complex intuition (if complex it be) takes on that simple and unitary form which common sense finds and naively accepts in its simplicity? I could not make answer, I could not as yet

see my way to an answer.

At all events, it seemed to me that one could not gaily step across from the idea of the rosebud 'in mind' to a physical thing in the external world which goes by the same name. Nor could one confidently assert that 'this,' in any strict sense, resembles 'that.' And it seemed to me that, the further one gets in the analysis of 'this' and of 'that,' the further one gets from any resemblance between the mental and the physical. Such, for me, was the message of Huxley in his discussion of the "Metaphysics of Sensation." But if one could not step across from 'this' to 'that,' could one get across from 'that' to 'this'? Here "that" was some physical transaction within the physical body -- say somewhere in the brain. And to say that here there was aught of resemblance of 'that' and 'this' seemed well-nigh absurd. How, then, was the presence of 'that' in some [p. 247] way connected with the occurrence of 'this'? I was up against the body-mind problem. Concerning this I read all that I could lay hands on. Spinoza's 'identity hypothesis' -- two attributes of one substance -- seemed to be on the right track. Still, what, in terms of empirical science, was this 'substance'; what were these 'attributes'? Clifford's *tour de force* anent 'mind-stuff' intrigued me. But what was the relation between 'stuff,' in some sense, and 'substance,' in some sense? In a note of a little later date I find the query: "Are the atoms in a molecule its 'stuff,' and is what we call its 'substance' just the way in which they 'go together' in the molecule? Locke, speaking of substance, says that 'a certain number of simple ideas go constantly together.' Are not these simple ideas the stuff of mind; and is not their going together the admittedly complex idea of the substance of the mind? Do we, in molecule or mind, need other substance than this?" But how comes it that Clifford's mind-stuff takes on the appearance of matter-stuff? I was puzzled, as, so far as I could make out, were my betters.

Meanwhile, I wrestled with the problems of evolution. More and more did it seem that, for me, near the heart of them was the relation or co-relation of the physical, culminating in observable behavior as physiologically interpreted, and (at any rate in man and some animals) the mental, to which introspection in the sense of an appeal to one's own first-hand experience affords the sole clue, though we refer or 'impute' like kinds of experience to others, however we may interpret the fact that we have come to do so.

I reread Darwin with special regard to this problem; browsed in Romanes' *Animal Intelligence*; and resolutely tackled Herbert Spencer. Like others, I could not but be struck by Darwin's open-eyed facing of difficulties -- "himself his severest critic" -- as contrasted with Spencer's blind-spot to evidence which did not support his cherished convictions. None the less, I was caught within the sphere of his influence and believed that when the chaff was winnowed from the grain there was seed for a rich harvest.

With regard to Romanes' collection of anecdotes, psychologically interesting in its way, I felt, as no doubt he did, that not on such anecdotal foundations could a science of comparative psychology be built. Most of the stories were merely casual records, supplemented by amateurish opinions of passing observers whose psychological training was well-nigh negligible. I then entertained doubts [p. 248] whether one could extract from the minds of animals (wholly inferential from their observable behavior) the data requisite for a science, properly so called. Did one get out of the animal mind aught else than that which one put into it?

Still, here at any rate was material for a science of animal behavior, a purely observational science. And here an interpretation of instinct seemed to be crucial. Was it to be physiological only? Was there nothing mental about it? If there is something mental, how does the mind step in and what part does it play. Romanes spoke of instinct as reflex action into which is "imported the element of consciousness." In what way and whence was it 'imported'? One harks back to the body-mind problem.

In all this there is little more than was 'common form' in many young men of my day. But I am invited to be autobiographical. Even so, I must confess that what I have set down is too crisp and clear-cut. There was not a little mental wobbling. It must suffice to show at least the stage that I had thus far reached in my pilgrim's progress.

My first ten years at University College Bristol (1884-1893) were, save in vacation, fully occupied with the duties of daily routine. I published a little book on *The Springs of Conduct* as a *ballon d'essai* to ascertain whether my voice would "carry beyond the walls of my classroom and lecture theater" and to elicit helpful criticism. It contained a lot of poor stuff; but it served my purpose in writing it. I compiled also a textbook on *Animal Biology* and wrote papers on local geology. But I realized that in zoology and geology I was no more than a tolerably conscientious hireling; and, to be frank, I did not aspire to be more than this. I felt that if I was to contribute anything to the advance of knowledge it must be in the field of mental evolution; and the most promising corner of that field for further intensive culture seemed to be the lower reaches of mind near the contour line below which lies all that was conventionally spoken of as instinct, while above it is the region of intelligence. So my vacation studies took form in a somewhat portly work on *Animal Life and Intelligence*.

Still, though this gave, as I ventured to hope, a fairly extensive survey of the facts and theories which must be taken into consideration, it showed little sign of that 'further intensive culture' which comes only through close observation under experimental conditions. The next step, then, say in 1893, was to remedy this defect by getting to work upon some definite inquiry with a definite end in view.

It seemed that, broadly speaking, the characterizing feature of instinctive behavior -- or, more strictly, the instinctive factor in behavior -- is like performance on the first and on all subsequent occasions. If the performance is markedly different on subsequent occasions, some other factor, say 'intelligence,' has to be reckoned with. The first thing to do, therefore, was to get at first occasions and to make pretty sure that they *are* the first occasions on which some specific performance on the part of this or that animal is in evidence. In the case of insects there was pretty good evidence that the instinctive factor is predominant, and that performance on the first and on later occasions is very similar; though, even here, it is hard to say on what subsequent occasion, and under what conditions, some measure of intelligence may justifiably be 'imputed.'

I chose young birds of many species, hatched out in an incubator, as the chief, but not the only subjects for close, even meticulous, scrutiny -- with results which are on record. In observations on older birds, and on other animals, such as dogs, I sought always, with regard to any performance, to take note of the whole sequence of occasions which led up to it. Here the aim was to ascertain how far, if at all, a 'rational' or reflective factor was in evidence. And here again the results are on record.

I wish now to emphasize that throughout the whole investigation, from first to last, my central interest has been psychological as I understand the meaning of this word. My aim has been to get at the mind of the chick or the dog or another, and to frame generalizations with regard to mental evolution. I could only do so through close observation of behavior. But, for me, the plain tale of behavior, as we observe and describe it, yields only, as I have put it, body-story and not mind-story. Mind-story is always 'imputed' insofar as one can put oneself in the place of another. And this 'imputation,' as I now call it, must always be hazardous. But we can in varying measure reduce its hazardry insofar as it may be checked by an appeal to one's own first-hand experience under introspection.[p. 250]

Introspection is a reflective process on our part. But it does not follow that what we find under introspection must itself be reflective. I find much in my first-hand experience which is unreflective, and lower still, subconscious. To interpret animal behavior one must learn also to see one's own mentality at levels of development much lower than one's top-level of reflective self-consciousness. It is not easy, and savors somewhat of paradox. One has reflectively to put off, not only one's reflective spectacles, but even one's perceptive spectacles, and get down to the bare sensory foundations of one's mental equipment. But it can in some measure be done; or, if it cannot be done, we can learn nothing of mental development in the individual or of mental evolution in animals or in men.

Dig down as deeply as I can to the substrata of my own mind -- put myself in the place of another, say an infant or a newly hatched chick -- I find not only items of mind-stuff analytically teased out, but substantial organization of that stuff in some sort of orderly pattern (Gestalt); and this organization is not physiological only -- though that it is in the body-story -- it is mental also at the very roots of the mind-story. Mind -- even the lowest conceivable mind, say that of an amoeba -- discloses some relational organization. And this organization is, under analogy, no mere mechanical mixture of aggregated particles of elementary 'stuff,' it is an organic compound with 'substantial unity.'

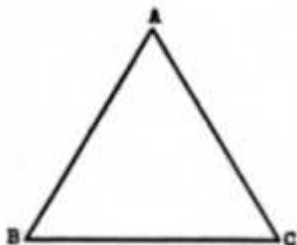
It may be said -- it has again and again been said -- that the line I have been led to draw between the body-story (with which physics and physiology are concerned) and the mind-story (with which psychology is concerned) implies a drastic separation reminiscent of the old notion of a 'great gulf' fixed between matter and mind. As I draw the distinction in scientific regard, that is not so. Events in the body are always, as I believe, so co-related with occurrences in the mind that with adequate knowledge one could infer these from those and those from these. This, as yet, may be only a working hypothesis. But if we can in no wise infer mental occurrences from observable behavior, anything like a genetic science of mind is in sorry plight. We are at the mercy of some sort of 'direct revelation through intuition' which itself needs psychological interpretation. What I seek here to emphasize is that all experimental work in a psychological laboratory, however simple or however complex [p. 251] may be the instrumental means to its prosecution, has for its aim and objective the telling of mind-story. Mental relations are always in the psychological focus. The 'great gulf' is just the difference between mental relations, on the one hand, and physical relations, on the other hand. They are closely co-related; but under no speculative 'identity hypothesis' can this radical distinction be eliminated.

VI

It is fully thirty-five years since, through systematic observation under experimental conditions, I began to hammer out a psychological scheme (such as it is) which I could label my own. At the close of last century, in *Animal Behavior*, I gave expression to the form it had then taken. Already there were changes which rendered earlier statements out of date. Now I look back on it and see only in the making my outlook of today in *The Animal Mind*.

I suppose that an autobiographical account of the successive changes of opinion and attitude might be set down. I doubt whether in my case an attempt to do anything of the sort would be worth while. I propose, instead, to summarize my present position.

Anyone's interpretation of mental organization is in some way fitted in with his philosophical scheme. In detail, this scheme is probably a pretty complex affair. But one may ask him: What after all is the *ABC* of it? I ask myself this question, and put the answer, to begin with, in diagrammatic form as the triangle *ABC*. Here *B* stands for Body and its Behavior as part of the



physical world in the esse of which I have been led to believe. *C* stands for someone's Conscious experience -- not only my own, of which I have no doubt, but that of minds other than mine in the esse of which I have been led to believe, though in some minds the word "conscious" (if it be retained) must be written with a very small 'c.' [p. 252] *A* stands for Activity or Agency -- some driving Force, or set of Forces -- in terms of which I seek to explain or account for all that happens in *B* and *C*. In the esse of this, too, I have been led to believe. I leave these beliefs as they stand, feeling pretty sure that everyone has passed through a stage

of sharing them in some form.

Now in my scheme, psychology is concerned with *A* or with *B* only insofar as there are, within *C*, 'ideas' which represent them. In other words, on this scheme, the psychologist deals with *B* or with *A* (and, indeed, with other minds than his own) in terms of 'ideal construction'; and how such ideal construction takes form in reflective thought, it is part of his business to ascertain -- if he can. He is faced by an evolutionary problem. Ideal constructs there are in the reflective field of view. He must render some genetic account of how they got there.

But on these terms the ideal constructs which 'represent' *A* and *B* are within *C*. Psychologically, we are dealing with (*A* *B*) *C* where the parentheses enclose reflective ideas of *A* and *B*.

My philosophical assumption, however, is that there is a 'real' *A* and a 'real' *B* whose esse is independent of ideal constructs within *C*. This is an assumption which goes outside or beyond psychology. Berkeley did not accept such an assumption with reference to *B*, but fully accepted such an assumption with reference to *A*. I accept both. This means that, outside of the subject-matter of psychology, there is that of physics; and that beyond that of psychology and that of physics there is that of Activity. The words 'outside' and 'beyond' have here no spatial implication. They signify "extraneous to the *C* universe of discourse."

The salient point for emphasis is that what lies beyond physics and psychology -- namely, Activity or any form of driving Force -- shall, on methodological grounds -- that is, as a convention or policy -- be regarded as "external to the province of science." Here I follow Huxley and Clifford. Many physicists, so long as they keep within their scientific domain, accept this policy, and only invoke Force (in the mediaeval sense of this word) when they divagate into philosophical discussion. Some psychologists do so on like grounds. I am among their number as a matter of policy.

If, then, in science, as thus delimited, one strikes out *A*, one is left with *B* and *C*. It follows that not only has one nothing to do with driving Force within *B* or within *C*, but nothing to [p. 253] do with 'interaction,' reciprocal or one-sided, as between *B* and *C*. One says only that *B*-events and *C*-occurrences are co-related, or are concomitant within the living organism as hyphenated body-mind.

Still, one freely admits -- nay, strenuously contends -- that what is co-related in *B* and *C* is this or that mode of organization. These modes of organization one accepts as one finds them without (in science) asking: To what organizing Activity are they due?

Evolution, from the scientific point of view, is progressive organization, 'this' in *C* co-related with 'that' in *B*. To distinguish a special feature of organized advance, alike in *B* and in *C*, I have of late borrowed from G. H. Lewes the word 'emergent.' But the notion it embodies is quite old. Briefly stated, the hypothesis is that when certain items of 'stuff', say *o p q*, enter into some relational organization *R* in unity of 'substance,' the whole *R* (*o p q*) has some 'properties' which could not be deduced from prior knowledge of the properties of *o*, *p*, and *q* taken severally. So far, the advance is relatively step-like or 'jumpy.'

Save for laying stress on the fact that this purports to be a scientific hypothesis, with no reference, as such, to creative Activity, I need here say no more than that I accept it. But to indicate its psychological bearing, and to show that it is nowise new, I quote from Professor Höfding this passage. Speaking of James Mill, Höfding says that "he lays great weight on the point that . . . several ideas and feelings may enter into so intimate a union with each other as to become inseparable, while the new totality, thus formed, possesses qualities which are not possessed by any of the parts. . . . The new qualities of the product cannot be deduced from the factors."

I have tried to state as clearly as due regard for brevity permits my philosophical ABC. I have done so because, as I see the present state of affairs, there are three main schools in psychology.

1. Those who include *A* as a scientific concept and explain mental occurrences as due to the Causality of Mind, or perhaps in terms of driving Forces of which sundry Instincts are specific examples.
2. Those who exclude *C* from the pale of science and define psychology as "whole action physiology" and no more.
3. Those who agree with advocates under (1) in claiming for psychology the status of a branch of science whose proper domain is mental organization, but who differ from them in relegating to [p. 254] philosophy all discussion of the further question: To what Source -- creative or directive -- should we attribute these modes of organization?

I serve in the ranks of those who belong to the third of these schools of psychology.

VII

Physicists claim that they deal with a closed system of physical events intolerant of 'psychic additions.' I suggest that, in like sense and on like grounds, the psychologist may deal with a closed system of mental occurrences. In each case the science is professedly 'abstract.' Psychology treats of mental relatedness in abstraction from physical relatedness, co-present but taken for granted. That is what I mean by urging that we should distinguish mind-story from body-story-distinguish, be it noted, not separate.

Practically, no doubt, we deal with matters 'in double regard' -- as physicists (and physiologists) *and* as psychologists. We deal with mind-story as connected with, and not divorced from, body-story. None the less, the one should be distinguished from the other since the relations are of a different order.

On this understanding I elect to use the word 'behavior' with reference to body-story. It denotes organized sets of events in the physical world. It is *B*-business and should be observed like any other mode of *B*-business. So far, in reference to body-story, I am strictly 'behaviorist.' Then I use the word 'instinctive' (with due warning) as adjectival to behavior, accepting the common usage of this adjective by naturalists. Instinctive behavior thus falls under the heading of body-story. But it has its accompaniment or concomitant in mind-story. That I speak of as 'awareness in behaving.' In my use of the word 'awareness' (again with due warning) I depart from current usage. I do not now speak of awareness of something seen, tasted, or touched. I restrict the word 'awareness' (followed by *in*) to some mode of so-called 'subjective' experience, such as *behaving, seeing, tasting*. For that which is objectively experienced I use the word 'reference' (followed by *to*).

Now suppose that, for the first time in its life -- on some first occasion -- a young animal, or an infant, behaves in some highly organized way. This affords an example of instinctive behavior. It is an instance that falls under body-story. The performance, however, is accompanied by awareness in behaving; and the total aware-[p.255]ness in behaving is no less highly organized, as such, in mind-story than is the behavior in body-story. The intrinsic 'ground' (as I put it) of the behavior is the inherited organization of events in the body -- to be discussed under physiology. Concomitant with this is the intrinsic organization of awareness in behaving which is part of mind-story.

But there are also external 'conditions' to be reckoned with in body-story -- namely, those of sensory stimulation. Here the mental accompaniment is (*a*) awareness in sensing-seeing, tasting, and so forth -- and (*b*) the evolutionary precursor of that which in later development takes form as perceptive reference. Here I have been in difficulties. Owing to the ambiguity of the word 'sensations,' I venture to speak of (*b*) as 'percipient' reference though the word 'reference' is used in the literary figure of prolepsis, since percipience as such affords only the data for reference under perception. Percipient reference in this attenuated sense is a highly organized 'pattern' in mind-story (even on the first occasion), answering to the highly organized pattern of receptor stimulation, and its neural outcome, in body-story.

This synthesis of $a + b$ + awareness in behaving is all that I feel justified in imputing to a mind when 'brother body' is at the instinctive stage of behavior. And, insofar as the behavior is instinctive, that mind is shut up within the passing moment ('specious present') of the current occasion. There is, as yet, no location of 'objects' in space; no reference to foregoing occasions in the past; no reference to occasions that may come in the future.

One has to realize -- only lately have I been led more fully to realize -- how the evolutionary advance from the lower percipient stage of mental development to a higher perceptive stage, and the further advance to a yet higher reflective stage, opens up for genetic psychology a problem in that which one may speak of as 'mental space and time' in an objective field of reference. Taking our cue from the outcome of modern physics we are prone to suppose that even the most primitive mind starts with ready-made ideas (in the Lockean sense) of space and of time. (The concept of space-time is quite recent.) We are prone to suppose, for example, that when a newly-hatched chick pecks for the first time at a rice-grain out there, he 'must' have in mind an idea of its 'thereness.' In order to peck at it there, we say, he must 'know' in some intuitional fashion where it is. This he has not progressively to learn.[p. 256]

The alternative interpretation of the observable facts is that he has to learn this. Crudely stated, he does not know that it is there and then find it there on pecking at it. He finds it there through instinctively pecking at it, and thus learns its thereness for further behavior. The so-called direct and primary (nativistic) intuition of space is, as I believe, a secondary or derivative compound, not an elementary factor which is primary or original.

On this interpretation how does perceptive thereness arise in the course of genetic process? One has sensory percipience, say under vision; one has also awareness in behaving thuswise. When, on subsequent occasions, these *combine* in remembrance there arises, or 'emerges,' a new quality referred to the situation under associative organization. Certain sense-ideas and certain behavior-feelings and their revivals enter into so intimate a union as to become inseparable, while the new totality, thus formed, has the new quality of thereness which could not be deduced from those of the factors taken severally.

I must be content here thus briefly to state, and not attempt to defend, this hypothesis with respect to the genetic origin of perceptive thereness in space. My autobiographical aim is to show the later drift of my thought.

Not only space, however, but time also, dawns on the perceptive horizon. When, quite early in one's infant days, one has learned to see a thing there, one 'expects' on further behavior to find it there -- or, as I prefer to put it, one has 'fore-experience' of its thereness. I regard fore-experience as the chief avenue through which is opened up the first dim vista of that which we reflectively speak of as time.

Revert to what I speak of as the percipient stage of mental development. Assume that the primitive mind is carried forward on the crest of a wave which advances through a series of 'nows,' each of which is a specious present. We interpret this in terms of a space-time frame, cunningly devised to enable us to record, and to deal metrically with, the passage of events which is represented therein. But do we credit the primitive mind with anything of this sort? One must put oneself in *its* place. It is shut up in the now of what we call the specious present -- a short span of *our* time-plan of events. Let us further assume on the basis of our first-hand experience that each percipient occurrence does not snap out in-[p. 257]stantaneously but leaves at the rear of the passing moment what we may picturesquely speak of as a fading trail of the past. There is mental 'duration' answering to physical and physiological 'endurance' of events. If so, we have something 'timey' -- some time-change -- to start with, even at the percipient stage of mental development. We speak reflectively of change occurring in time. Here we invert the statement and say that time-experience arises through change. Hence, if we include not only strictly instantaneous occurrences but their fading trails, the range of current experience is so far widened.

But, so far, in the mind as percipient only, there is no hint of what is coming -- or, as I put it, no

glimmer of fore-experience. For awhile I spoke of this as 'prospective reference.' Since what I meant has been often misunderstood, I now try to make matters clearer by distinguishing fore-experience from prospective reference. I want to get at something which, as I think, may be inferred from the behavior of a chick in the first day or two of its life after hatching. After pecking two or three times at some nasty thing and experiencing its nauseous taste, he thereafter seizes it no more. Why is this? I assume, on the basis of my own first-hand experience on analogous occasions, that he has in mind fore-taste, though there is no actual taste through the stimulation of receptors in the mouth. In like manner, his later behavior in many ways and respects may be interpreted if one may impute to him varied modes of fore-experience as the fainter revival (with a difference) of precedent modes of more direct experience.

The emphasis here falls on the fact -- if fact it be -- that fore-experience, as such, falls within the specious present or passing moment of some this occasion as what William James called a fringe of futurity in its advancing edge. It does not, like prospective reference at the later stage of reflection, look forward to *subsequent* occasions separated by a time-gap from that which is now present. In this sense, that which is for us the future is not for the percipient mind opened out.

I venture then to say -- though the statement is elliptical -- that perceptively intelligent behavior is under the *guidance* of fore-experience. I here use the word 'guidance' in a purely relational sense, and not, as others may use it, with the implication of some directive Activity to which it is due. In matters of science *such* Guidance is beyond my purview. Surely one does not depart far [p. 258] from accredited usage if one says that fore-knowledge with prospective reference to future events such as those of an eclipse, or, at a lower stage of mental development, fore-experience, as above defined, affords guidance in reflective conduct, on the one hand, and in intelligent behavior on the other hand.

VIII

My aim is autobiographical -- just to indicate the pattern of my later thought, and my present psychological outlook.

On my interpretation, there is at the percipient stage of mental development -- co-related with the instinctive stage of observable behavior -- neither mental reference to spatial thereness, nor fore-experience as a guide to behavior. It is with the advent of thereness and of fore-experience that we pass in mind-story from percipience to perception, and in the co-related body-story from instinctive to conditioned behavior. At least I incline to the opinion that 'conditioning' may be taken to imply some tincture of fore-experience. In any case, it is probable that the advance of intelligence in the higher animals, and in the infant, in large measure consists in the progressive organization of thereness and of fore-experience in the course of individual life.

But, however complex this associative organization may be -- however nicely attuned to the circumstances of the physical environment represented in perception on the part of animal or infant -- it is still a far cry from this to the reflective organization of a space-time *plan*, applicable at first to some group of situations, more or less similar and yet more or less different; applicable at last to all situations in any known context. Supervenient on perceptive organization there is in some animals (perhaps only the higher apes) and in every normal child reflective organization. Thus, broadly speaking, I distinguish at least three salient stages of advance in mental organization -- percipient, perceptive, and reflective; subconscious, conscious, and self-conscious, respectively.

I am old-fashioned enough to emphasize the *self*-conscious character of all reflective procedure. By this I mean that in this procedure there is always the idea of self (one's own self or that of another) in the picture. I doubt whether a merely perceptive animal or infant has any idea of self in his unreflective picture.

But my present concern is with the reflective 'picture,' within [p. 259] which the self plays at any rate a prominent part. It implies always a space-time plan of physical events and mental

occurrences -- a plan in which any 'there' and any 'then' has reflectively realized relations to the central 'here and now.' The threefold stress is on *plan* in mind, on *relation*, as *conceived* -- or, if perceived, subject always to reflective backing. My position will be scouted by many of my colleagues as untenable. But I believe that not until the stage of reflection is reached do relations swim into the ken of mind. It may be asked: Are not thereness and fore-experience relational? Yes; unquestionably, as *we reflective folk* interpret them. But the rabbit that 'goes for' a carrot there, and is guided in doing so by present and insistent fore-taste, may be quite incapable of framing any idea of relations if there be in his mind no reflective backing. Here, however, I make no attempt to defend this position, namely, that, prior to reflection, ideas of relation are not yet in being. I am content to state it as an autobiographical confession.

They do so, however, when the level of reflection is reached. Let us, then, fix our attention on temporal relations of before and after. Then we have anticipation and retrospection. We say that there is prospective reference to some future occasion or retrospective reference to some occasion in the past. But I submit that there is also, as reflective backing, present reference to a time-plan in which these future occasions not yet in being, or these past occasions no longer in being, are reflectively charted. We deal with the map (within the specious present) on which the milestones ahead of us and behind us (and intervening occurrences) are represented to scale. We, so to speak, view a picture of the course of affairs through reflective spectacles on which this time-scale is recorded. In forward regard there is not only fore-experience adjunct to *this* current occasion but prospective reference to some *future* occasion duly entered on the time-chart -- say an appointment for 10:30 tomorrow morning. Here self (myself) is clearly in the picture. In the case of some astronomical event charted to occur a dozen years hence, I am not in the picture. But, I take it, one normally thinks of some other self, some observer, who, were he so disposed, could witness the event and confirm the accuracy of prospective reference thereto. It is in this sense, I submit, that there is always the idea of self -- not necessarily oneself but often some other self -- in the reflective picture. And I think that in the three-year-old child one can see evidence of the dawn of such self-consciousness.[p. 260]

I question, however, whether the ox, or even the dog (or the infant) ever 'thinks of' some future event with prospective reference, or of some past event with retrospective reference, having the while an idea of self -- himself or another -- in the reflective field of view. In that sense, at the perceptive level of mental development there is no self-consciousness and no time-plan to which past or future occasions are referred.

Obviously the vexed problem of the genetic development of retrospective memory and of prospective anticipation is thus opened up. I cannot enter on it here. Suffice it to say that, even at the percipient level, we must impute to the primitive mind (of a newly hatched chick, for example) 'retentiveness' as the persistence of mental organization thus far established. At the perceptive level we must impute also 'remembrance,' in the sense of such revival as takes form as fore-experience. Only at the reflective level *need* we impute prospective reference to future occasions or retrospective reference to occasions in the past.

If we restrict the use of the word 'memory' to the last phase, then infants and most animals have no memory but plenty of remembrance. If we emphasize retentiveness, then there are no animals, even the lowest, that have no memory in this sense. In any case -- however we define it -- we should, as psychologists, discuss memory in terms of mental relations under (a) awareness in remembering or recollecting, and (b) reference to that which is remembered or recollecting. We should keep within our province of scientific inquiry. And within that province we should not regard Memory as an Activity to which such organization as we find may be due. In the science of psychology we should not assign to Memory the role of Efficient Cause or to Anticipation the rôle of Final Cause.

IX

If one may distinguish at least three salient stages in mental evolution -- provisionally named percipient, perceptive, and reflective (subconscious, conscious, and self-conscious), and if, under imputation, one may assign this or that level of mentality to an animal whose observable

behavior has such and such a character, or whose procedure passes through such and such stages, one has a definite scheme as a basis for interpretation. And, since this scheme is professedly genetic and evolutionary, one should not on this basis interpret [p. 261] a lower form of behavior as implying a higher level of mentality than the evidence demands. In evolutionary and developmental regard one should proceed from below upwards.

But imputation of this or that mental status to a mind other than one's own should always be endorsed by introspection which deals with one's own first-hand experience. Here one proceeds from above downwards, starting as interpreter from the top-level of reflection. Critics of introspective procedure are prone to contend that it cannot pierce below this reflective level at which it must start. If that be so in their own case, it would be impertinent to assert that for them it is not so. There are, however, others who find that in themselves affairs mental are going on *at all three levels*. In some affairs they act reflectively; in many others they are behaving unreflectively, and are, as they aver, unmistakably aware in so behaving. A space-time plan and reference to self then drops out of the introspective picture. But fore-experience may be quite recognizably there. Even this may not be in evidence. Multifarious occurrences just come without any warning in fore-experience that one can detect, and bring something quite new and unexpected.

No doubt these unreflective factors in one's mentality are introspectively described through reflective spectacles. But I think that allowance can be made, in large measure if not wholly, for the distorting influence of these spectacles. Otherwise, if it can nowise be reached by introspection, one has not first-hand acquaintance with and knowledge of unreflective procedure as it runs its course unaffected by reflective coloring.

The question, however, which I wish here to raise is whether we should, as psychologists, interpret any mode of unreflective procedure in terms of teleology. I, for one, as at present advised, should not do so. Psychologically, the procedure which I should designate as teleological always implies an end in view to be attained on some future occasion if all goes well. It implies not only fore-experience adjunct to some current occasion but prospective reference to a later occasion charted in a reflective time-plan. In reflective procedure on our part, prospective reference with teleological relations, as thus characterized, is very much in evidence. But is it in evidence in unreflective procedure? I think not. Present fore-experience, as distinguished from prospective reference, is all that the evidence demands. And prospective reference is distinctive of a mind which has reached reflective status.[p. 262]

I here accept what I take to be a legitimate and strictly psychological definition of the word 'teleological' as adjectival to procedure that implies a mental relation which obtains when one has as end in view some specific change in an existing situation to take effect on some future occasion to which there is prospective reference; or to reproduce this existing situation on some future occasion. There is a temporal relation between an earlier and a later phase in the course of one's passage from precedent end in view to subsequent outcome in fulfilment. In the earlier phase one's procedure is teleological with prospective reference to the later.

I am, however, well aware that a dictionary definition of teleology is: "a Doctrine of Final Causes." But I am not alone in contending that a doctrine of final causality (and indeed of all causality as distinguished from relational causation) lies beyond the purview of natural science. It should be relegated to the philosophical classroom where it is properly in place.

This philosophical question with regard to final causality I do not here raise. The psychological question I do raise is whether unreflective procedure in men and some animals should be interpreted in terms of prospective reference on their part to some anticipated outcome. And I add the further questions: Is it not often interpreted in such terms? If so, does not this run counter to the evolutionary canon that we should not interpret an earlier and lower stage of mental development in terms applicable only to the interpretation of the higher and later stage?

It may, of course, be said that this so-called canon of evolutionary interpretation must be rejected. I have been led unreservedly to accept it. That is where an autobiographical

confession of considered belief comes in.

How then, in summary statement, do matters work out?

There are three stages of evolutionary and developmental advance -- percipient, perceptive, and reflective. Only at the last of these stages are there teleological relations. Hence we should not interpret in mind-story (or in co-related body-story) anything that happens prior to the advent of reflection in terms of teleology.

This statement, however, does not purport to have any reference to the philosophical concept of Final Causality. Teleology in that sense is reserved for discussion, not by psychologists in their capacity of men of science but by those who, as M. Bergson puts it (in one [p. 262] passage), "superpose on scientific truth a knowledge of another kind which may be called metaphysical."

X

I must now draw to a close. I started in my 'teens with Berkeley. In his *ABC* there are God, the material world, and the self-conscious subject. He acknowledges the *esse* of *A* and of a great number of *C*'s (other than himself). He does not acknowledge the *esse* of the material world as such. It has being only 'by way of idea' under *percipi*. In my *ABC* the *esse* of *A*, *B*, and *C* (other minds than my own) is acknowledged in an attitude of belief. The discussion of *B* and *C* (and of their co-relation) is reserved for science. That of *A* is relegated to philosophy. Physics (including physiology) deals with *B* as a closed system of events which brooks no 'psychic additions.' Psychology deals with *C*, including, of course, *A* and *B* insofar as they are disclosed 'by way of idea,' under *concipi*. It, too, is a closed system. But 'closed' in what sense? In the sense that it selects as its province of inquiry mental relations as distinguished from physical relations. But in the concrete -- in the living organism and its environment -- there are both physical and mental relations. Hence the need for inquiry into the ways in which they are co-related. This inquiry is prosecuted by physicists and psychologists when they meet in joint session, and discuss matters 'in double regard.'

Experimental work in a psychological laboratory is joint-session-business. Physical apparatus is more and more cunningly devised; nuances of bodily behavior are more and more delicately observed and recorded; a physiological interpretation in terms of external stimulation (or internal excitation) and response is kept steadily in view; adaptation of behavior to circumstances is fully considered. But to what end? I submit that the end in view is just psychology --the science which deals with mind. All the rest is means to that end.

No doubt, this science may be applied to the attainment of some further end -- some 'practical' end, say in the work of the teacher or in industrial affairs. But this is applied psychology -- analogous to applied physics in engineering, or applied chemistry in brewing, or applied biology in cattle-breeding. I want to get down to bed-rock [p. 264] in the 'pure' science of psychology. Then we have a closed system of *C*.

Does this mean that all the current work in applied psychology -- in medical psychology, for instance -- does not count? Far from it. All counts; but, irrespective of application or social value, it counts in pure psychology as means to the end of forging a science of mind -- abstract, no doubt, just as pure physics is abstract, but a factor in the concreteness of natural science as a whole, just as natural science is a factor in the concreteness of philosophy as a larger whole.

Thus we come back to some *ABC* which may represent schematically the concrete whole of philosophy. Here the methodological abstractedness of science is superseded. And in accordance with the 'organic principle' -- if that be accepted -- this whole is more than the aggregated 'stuff' of its several constituent factors. It has 'substantial unity' in their combined relatedness to each other. Neither *B* nor *A* is quite what it is save in its relation to *C*. And *C* is not all that it is apart from its relation to *A* and *B*. For philosophy, *C* is no longer a closed system.

Is this true also of *B*? That is still subject-matter for debate. I so far follow Berkeley as to believe that it is true also of *B*. Alike in perception and for reflective thought there remains always some tincture of *sic esse*.

And what of *A*? This again is a moot question. If one can find Activity in first-hand experience, one has there at least an instance of *A*. But, even so, does *A*, as universal throughout nature, wholly tally with this necessarily personal instance? Or must one rest content with the *sic esse* of ideal construction?

In response to editorial request, I have -- with some diffidence in respect to my right or my capacity to place on record anything which my colleagues may deem it worth while to read -- contributed my mite to this "History of Psychology." If I have mingled too much philosophical flavoring, I plead in excuse that it must e'en be my autobiography.

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