Our Knowledge of the External World as a Field for Scientific Method in Philosophy

By

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PREFACE

The following lectures[1] are an attempt to show, by means of examples, the nature, capacity, and limitations of the logical-analytic method in philosophy. This method, of which the first complete example is to be found in the writings of Frege, has gradually, in the course of actual research, increasingly forced itself upon me as something perfectly definite, capable of embodiment in maxims, and adequate, in all branches of philosophy, to yield whatever objective scientific knowledge it is possible to obtain. Most of the methods hitherto practised have professed to lead to more ambitious results than any that logical analysis can claim to reach, but unfortunately these results have always been such as many competent philosophers considered inadmissible. Regarded merely as hypotheses and as aids to imagination, the great systems of the past serve a very useful purpose, and are abundantly worthy of study. But something different is required if philosophy is to become a science, and to aim at results independent of the tastes and temperament of the philosopher who advocates them. In what follows, I have endeavoured to show, however imperfectly, the way by which I believe that this desideratum is to be found.

[1] Delivered as Lowell Lectures in Boston, in March and April 1914.

The central problem by which I have sought to illustrate method is the problem of the relation between the crude data of sense and the space,

time, and matter of mathematical physics. I have been made aware of the importance of this problem by my friend and collaborator Dr Whitehead, to whom are due almost all the differences between the views advocated here and those suggested in The Problems of Philosophy.[2] I owe to him the definition of points, the suggestion for the treatment of instants and "things," and the whole conception of the world of physics as a construction rather than an inference. What is said on these topics here is, in fact, a rough preliminary account of the more precise results which he is giving in the fourth volume of our Principia Mathematica.[3] It will be seen that if his way of dealing with these topics is capable of being successfully carried through, a wholly new light is thrown on the time-honoured controversies of realists and idealists, and a method is obtained of solving all that is soluble in their problem.

[2] London and New York, 1912 ("Home University Library").

[3] The first volume was published at Cambridge in 1910, the second in 1912, and the third in 1913.

The speculations of the past as to the reality or unreality of the world of physics were baffled, at the outset, by the absence of any satisfactory theory of the mathematical infinite. This difficulty has been removed by the work of Georg Cantor. But the positive and detailed solution of the problem by means of mathematical constructions based upon sensible objects as data has only been rendered possible by the

growth of mathematical logic, without which it is practically impossible to manipulate ideas of the requisite abstractness and complexity. This aspect, which is somewhat obscured in a merely popular outline such as is contained in the following lectures, will become plain as soon as Dr Whitehead's work is published. In pure logic, which, however, will be very briefly discussed in these lectures, I have had the benefit of vitally important discoveries, not yet published, by my friend Mr Ludwig Wittgenstein.

Since my purpose was to illustrate method, I have included much that is tentative and incomplete, for it is not by the study of finished structures alone that the manner of construction can be learnt. Except in regard to such matters as Cantor's theory of infinity, no finality is claimed for the theories suggested; but I believe that where they are found to require modification, this will be discovered by substantially the same method as that which at present makes them appear probable, and it is on this ground that I ask the reader to be tolerant of their incompleteness.

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LECTURE I

CURRENT TENDENCIES

Philosophy, from the earliest times, has made greater claims, and achieved fewer results, than any other branch of learning. Ever since Thales said that all is water, philosophers have been ready with glib assertions about the sum-total of things; and equally glib denials have come from other philosophers ever since Thales was contradicted by Anaximander. I believe that the time has now arrived when this unsatisfactory state of things can be brought to an end. In the following course of lectures I shall try, chiefly by taking certain special problems as examples, to indicate wherein the claims of philosophers have been excessive, and why their achievements have not been greater. The problems and the method of philosophy have, I believe, been misconceived by all schools, many of its traditional problems being insoluble with our means of knowledge, while other more neglected but not less important problems can, by a more patient and more adequate method, be solved with all the precision and certainty to which the most advanced sciences have attained.

Among present-day philosophies, we may distinguish three principal types, often combined in varying proportions by a single philosopher, but in essence and tendency distinct. The first of these, which I shall call the classical tradition, descends in the main from Kant and Hegel;

it represents the attempt to adapt to present needs the methods and results of the great constructive philosophers from Plato downwards. The second type, which may be called evolutionism, derived its predominance from Darwin, and must be reckoned as having had Herbert Spencer for its first philosophical representative; but in recent times it has become, chiefly through William James and M. Bergson, far bolder and far more searching in its innovations than it was in the hands of Herbert Spencer. The third type, which may be called "logical atomism" for want of a better name, has gradually crept into philosophy through the critical scrutiny of mathematics. This type of philosophy, which is the one that I wish to advocate, has not as yet many whole-hearted adherents, but the "new realism" which owes its inception to Harvard is very largely impregnated with its spirit. It represents, I believe, the same kind of advance as was introduced into physics by Galileo: the substitution of piecemeal, detailed, and verifiable results for large untested generalities recommended only by a certain appeal to imagination. But before we can understand the changes advocated by this new philosophy, we must briefly examine and criticise the other two types with which it has to contend.

A. The Classical Tradition

Twenty years ago, the classical tradition, having vanquished the opposing tradition of the English empiricists, held almost unquestioned sway in all Anglo-Saxon universities. At the present day, though it is

losing ground, many of the most prominent teachers still adhere to it. In academic France, in spite of M. Bergson, it is far stronger than all its opponents combined; and in Germany it has many vigorous advocates. Nevertheless, it represents on the whole a decaying force, and it has failed to adapt itself to the temper of the age. Its advocates are, in the main, those whose extra-philosophical knowledge is literary, rather than those who have felt the inspiration of science. There are, apart from reasoned arguments, certain general intellectual forces against it--the same general forces which are breaking down the other great syntheses of the past, and making our age one of bewildered groping where our ancestors walked in the clear daylight of unquestioning certainty.

The original impulse out of which the classical tradition developed was the naïve faith of the Greek philosophers in the omnipotence of reasoning. The discovery of geometry had intoxicated them, and its a priori deductive method appeared capable of universal application. They would prove, for instance, that all reality is one, that there is no such thing as change, that the world of sense is a world of mere illusion; and the strangeness of their results gave them no qualms because they believed in the correctness of their reasoning. Thus it came to be thought that by mere thinking the most surprising and important truths concerning the whole of reality could be established with a certainty which no contrary observations could shake. As the vital impulse of the early philosophers died away, its place was taken by authority and tradition, reinforced, in the Middle Ages and almost to

our own day, by systematic theology. Modern philosophy, from Descartes onwards, though not bound by authority like that of the Middle Ages, still accepted more or less uncritically the Aristotelian logic. Moreover, it still believed, except in Great Britain, that a priori reasoning could reveal otherwise undiscoverable secrets about the universe, and could prove reality to be quite different from what, to direct observation, it appears to be. It is this belief, rather than any particular tenets resulting from it, that I regard as the distinguishing characteristic of the classical tradition, and as hitherto the main obstacle to a scientific attitude in philosophy.

The nature of the philosophy embodied in the classical tradition may be made clearer by taking a particular exponent as an illustration. For this purpose, let us consider for a moment the doctrines of Mr Bradley, who is probably the most distinguished living representative of this school. Mr Bradley's Appearance and Reality is a book consisting of two parts, the first called Appearance, the second Reality. The first part examines and condemns almost all that makes up our everyday world: things and qualities, relations, space and time, change, causation, activity, the self. All these, though in some sense facts which qualify reality, are not real as they appear. What is real is one single, indivisible, timeless whole, called the Absolute, which is in some sense spiritual, but does not consist of souls, or of thought and will as we know them. And all this is established by abstract logical reasoning professing to find self-contradictions in the categories condemned as mere appearance, and to leave no tenable alternative to the

kind of Absolute which is finally affirmed to be real.

One brief example may suffice to illustrate Mr Bradley's method. The world appears to be full of many things with various relations to each other--right and left, before and after, father and son, and so on. But relations, according to Mr Bradley, are found on examination to be self-contradictory and therefore impossible. He first argues that, if there are relations, there must be qualities between which they hold. This part of his argument need not detain us. He then proceeds:

"But how the relation can stand to the qualities is, on the other side, unintelligible. If it is nothing to the qualities, then they are not related at all; and, if so, as we saw, they have ceased to be qualities, and their relation is a nonentity. But if it is to be something to them, then clearly we shall require a new connecting relation. For the relation hardly can be the mere adjective of one or both of its terms; or, at least, as such it seems indefensible. And, being something itself, if it does not itself bear a relation to the terms, in what intelligible way will it succeed in being anything to them? But here again we are hurried off into the eddy of a hopeless process, since we are forced to go on finding new relations without end. The links are united by a link, and this bond of union is a link which also has two ends; and these require each a fresh link to connect them with the old. The problem is to find how the relation can stand to its qualities, and this problem is insoluble."[4]

[4] Appearance and Reality, pp. 32-33.

I do not propose to examine this argument in detail, or to show the exact points where, in my opinion, it is fallacious. I have quoted it only as an example of method. Most people will admit, I think, that it is calculated to produce bewilderment rather than conviction, because there is more likelihood of error in a very subtle, abstract, and difficult argument than in so patent a fact as the interrelatedness of the things in the world. To the early Greeks, to whom geometry was practically the only known science, it was possible to follow reasoning with assent even when it led to the strangest conclusions. But to us, with our methods of experiment and observation, our knowledge of the long history of a priori errors refuted by empirical science, it has become natural to suspect a fallacy in any deduction of which the conclusion appears to contradict patent facts. It is easy to carry such suspicion too far, and it is very desirable, if possible, actually to discover the exact nature of the error when it exists. But there is no doubt that what we may call the empirical outlook has become part of most educated people's habit of mind; and it is this, rather than any definite argument, that has diminished the hold of the classical tradition upon students of philosophy and the instructed public generally.

The function of logic in philosophy, as I shall try to show at a later stage, is all-important; but I do not think its function is that which it has in the classical tradition. In that tradition, logic becomes

constructive through negation. Where a number of alternatives seem, at first sight, to be equally possible, logic is made to condemn all of them except one, and that one is then pronounced to be realised in the actual world. Thus the world is constructed by means of logic, with little or no appeal to concrete experience. The true function of logic is, in my opinion, exactly the opposite of this. As applied to matters of experience, it is analytic rather than constructive; taken a priori, it shows the possibility of hitherto unsuspected alternatives more often than the impossibility of alternatives which seemed primâ facie possible. Thus, while it liberates imagination as to what the world may be, it refuses to legislate as to what the world is. This change, which has been brought about by an internal revolution in logic, has swept away the ambitious constructions of traditional metaphysics, even for those whose faith in logic is greatest; while to the many who regard logic as a chimera the paradoxical systems to which it has given rise do not seem worthy even of refutation. Thus on all sides these systems have ceased to attract, and even the philosophical world tends more and more to pass them by.

One or two of the favourite doctrines of the school we are considering may be mentioned to illustrate the nature of its claims. The universe, it tells us, is an "organic unity," like an animal or a perfect work of art. By this it means, roughly speaking, that all the different parts fit together and co-operate, and are what they are because of their place in the whole. This belief is sometimes advanced dogmatically, while at other times it is defended by certain logical arguments. If it

is true, every part of the universe is a microcosm, a miniature reflection of the whole. If we knew ourselves thoroughly, according to this doctrine, we should know everything. Common sense would naturally object that there are people--say in China--with whom our relations are so indirect and trivial that we cannot infer anything important as to them from any fact about ourselves. If there are living beings in Mars or in more distant parts of the universe, the same argument becomes even stronger. But further, perhaps the whole contents of the space and time in which we live form only one of many universes, each seeming to itself complete. And thus the conception of the necessary unity of all that is resolves itself into the poverty of imagination, and a freer logic emancipates us from the strait-waistcoated benevolent institution which idealism palms off as the totality of being.

Another very important doctrine held by most, though not all, of the school we are examining is the doctrine that all reality is what is called "mental" or "spiritual," or that, at any rate, all reality is dependent for its existence upon what is mental. This view is often particularised into the form which states that the relation of knower and known is fundamental, and that nothing can exist unless it either knows or is known. Here again the same legislative function is ascribed to a priori argumentation: it is thought that there are contradictions in an unknown reality. Again, if I am not mistaken, the argument is fallacious, and a better logic will show that no limits can be set to the extent and nature of the unknown. And when I speak of the unknown, I do not mean merely what we personally do not know, but what is not known

to any mind. Here as elsewhere, while the older logic shut out possibilities and imprisoned imagination within the walls of the familiar, the newer logic shows rather what may happen, and refuses to decide as to what must happen.

The classical tradition in philosophy is the last surviving child of two very diverse parents: the Greek belief in reason, and the mediæval belief in the tidiness of the universe. To the schoolmen, who lived amid wars, massacres, and pestilences, nothing appeared so delightful as safety and order. In their idealising dreams, it was safety and order that they sought: the universe of Thomas Aquinas or Dante is as small and neat as a Dutch interior. To us, to whom safety has become monotony, to whom the primeval savageries of nature are so remote as to become a mere pleasing condiment to our ordered routine, the world of dreams is very different from what it was amid the wars of Guelf and Ghibelline. Hence William James's protest against what he calls the "block universe" of the classical tradition; hence Nietzsche's worship of force; hence the verbal bloodthirstiness of many quiet literary men. The barbaric substratum of human nature, unsatisfied in action, finds an outlet in imagination. In philosophy, as elsewhere, this tendency is visible; and it is this, rather than formal argument, that has thrust aside the classical tradition for a philosophy which fancies itself more virile and more vital.

B. Evolutionism

Evolutionism, in one form or another, is the prevailing creed of our time. It dominates our politics, our literature, and not least our philosophy. Nietzsche, pragmatism, Bergson, are phases in its philosophic development, and their popularity far beyond the circles of professional philosophers shows its consonance with the spirit of the age. It believes itself firmly based on science, a liberator of hopes, an inspirer of an invigorating faith in human power, a sure antidote to the ratiocinative authority of the Greeks and the dogmatic authority of mediæval systems. Against so fashionable and so agreeable a creed it may seem useless to raise a protest; and with much of its spirit every modern man must be in sympathy. But I think that, in the intoxication of a quick success, much that is important and vital to a true understanding of the universe has been forgotten. Something of Hellenism must be combined with the new spirit before it can emerge from the ardour of youth into the wisdom of manhood. And it is time to remember that biology is neither the only science, nor yet the model to which all other sciences must adapt themselves. Evolutionism, as I shall try to show, is not a truly scientific philosophy, either in its method or in the problems which it considers. The true scientific philosophy is something more arduous and more aloof, appealing to less mundane hopes, and requiring a severer discipline for its successful practice.

Darwin's Origin of Species persuaded the world that the difference between different species of animals and plants is not the fixed, immutable difference that it appears to be. The doctrine of natural

kinds, which had rendered classification easy and definite, which was enshrined in the Aristotelian tradition, and protected by its supposed necessity for orthodox dogma, was suddenly swept away for ever out of the biological world. The difference between man and the lower animals, which to our human conceit appears enormous, was shown to be a gradual achievement, involving intermediate beings who could not with certainty be placed either within or without the human family. The sun and planets had already been shown by Laplace to be very probably derived from a primitive more or less undifferentiated nebula. Thus the old fixed landmarks became wavering and indistinct, and all sharp outlines were blurred. Things and species lost their boundaries, and none could say where they began or where they ended.

But if human conceit was staggered for a moment by its kinship with the ape, it soon found a way to reassert itself, and that way is the "philosophy" of evolution. A process which led from the amoeba to man appeared to the philosophers to be obviously a progress--though whether the amoeba would agree with this opinion is not known. Hence the cycle of changes which science had shown to be the probable history of the past was welcomed as revealing a law of development towards good in the universe--an evolution or unfolding of an ideal slowly embodying itself in the actual. But such a view, though it might satisfy Spencer and those whom we may call Hegelian evolutionists, could not be accepted as adequate by the more whole-hearted votaries of change. An ideal to which the world continuously approaches is, to these minds, too dead and static to be inspiring. Not only the aspirations, but the ideal too,

must change and develop with the course of evolution; there must be no fixed goal, but a continual fashioning of fresh needs by the impulse which is life and which alone gives unity to the process.

Ever since the seventeenth century, those whom William James described as the "tender-minded" have been engaged in a desperate struggle with the mechanical view of the course of nature which physical science seems to impose. A great part of the attractiveness of the classical tradition was due to the partial escape from mechanism which it provided. But now, with the influence of biology, the "tender-minded" believe that a more radical escape is possible, sweeping aside not merely the laws of physics, but the whole apparently immutable apparatus of logic, with its fixed concepts, its general principles, and its reasonings which seem able to compel even the most unwilling assent. The older kind of teleology, therefore, which regarded the End as a fixed goal, already partially visible, towards which we were gradually approaching, is rejected by M. Bergson as not allowing enough for the absolute dominion of change. After explaining why he does not accept mechanism, he proceeds:[5]

"But radical finalism is quite as unacceptable, and for the same reason. The doctrine of teleology, in its extreme form, as we find it in Leibniz for example, implies that things and beings merely realise a programme previously arranged. But if there is nothing unforeseen, no invention or creation in the universe, time is useless again. As in the mechanistic hypothesis, here again it is supposed that all is given. Finalism thus

understood is only inverted mechanism. It springs from the same postulate, with this sole difference, that in the movement of our finite intellects along successive things, whose successiveness is reduced to a mere appearance, it holds in front of us the light with which it claims to guide us, instead of putting it behind. It substitutes the attraction of the future for the impulsion of the past. But succession remains none the less a mere appearance, as indeed does movement itself. In the doctrine of Leibniz, time is reduced to a confused perception, relative to the human standpoint, a perception which would vanish, like a rising mist, for a mind seated at the centre of things.

"Yet finalism is not, like mechanism, a doctrine with fixed rigid outlines. It admits of as many inflections as we like. The mechanistic philosophy is to be taken or left: it must be left if the least grain of dust, by straying from the path foreseen by mechanics, should show the slightest trace of spontaneity. The doctrine of final causes, on the contrary, will never be definitively refuted. If one form of it be put aside, it will take another. Its principle, which is essentially psychological, is very flexible. It is so extensible, and thereby so comprehensive, that one accepts something of it as soon as one rejects pure mechanism. The theory we shall put forward in this book will therefore necessarily partake of finalism to a certain extent."

[5] Creative Evolution, English translation, p. 41.

M. Bergson's form of finalism depends upon his conception of life. Life,

in his philosophy, is a continuous stream, in which all divisions are artificial and unreal. Separate things, beginnings and endings, are mere convenient fictions: there is only smooth, unbroken transition. The beliefs of to-day may count as true to-day, if they carry us along the stream; but to-morrow they will be false, and must be replaced by new beliefs to meet the new situation. All our thinking consists of convenient fictions, imaginary congealings of the stream: reality flows on in spite of all our fictions, and though it can be lived, it cannot be conceived in thought. Somehow, without explicit statement, the assurance is slipped in that the future, though we cannot foresee it, will be better than the past or the present: the reader is like the child who expects a sweet because it has been told to open its mouth and shut its eyes. Logic, mathematics, physics disappear in this philosophy, because they are too "static"; what is real is an impulse and movement towards a goal which, like the rainbow, recedes as we advance, and makes every place different when we reach it from what it appeared to be at a distance.

Now I do not propose at present to enter upon a technical examination of this philosophy. At present I wish to make only two criticisms of it--first, that its truth does not follow from what science has rendered probable concerning the facts of evolution, and secondly, that the motives and interests which inspire it are so exclusively practical, and the problems with which it deals are so special, that it can hardly be regarded as really touching any of the questions that to my mind constitute genuine philosophy.

(1) What biology has rendered probable is that the diverse species arose by adaptation from a less differentiated ancestry. This fact is in itself exceedingly interesting, but it is not the kind of fact from which philosophical consequences follow. Philosophy is general, and takes an impartial interest in all that exists. The changes suffered by minute portions of matter on the earth's surface are very important to us as active sentient beings; but to us as philosophers they have no greater interest than other changes in portions of matter elsewhere. And if the changes on the earth's surface during the last few millions of years appear to our present ethical notions to be in the nature of a progress, that gives no ground for believing that progress is a general law of the universe. Except under the influence of desire, no one would admit for a moment so crude a generalisation from such a tiny selection of facts. What does result, not specially from biology, but from all the sciences which deal with what exists, is that we cannot understand the world unless we can understand change and continuity. This is even more evident in physics than it is in biology. But the analysis of change and continuity is not a problem upon which either physics or biology throws any light: it is a problem of a new kind, belonging to a different kind of study. The question whether evolutionism offers a true or a false answer to this problem is not, therefore, a question to be solved by appeals to particular facts, such as biology and physics reveal. In assuming dogmatically a certain answer to this question, evolutionism ceases to be scientific, yet it is only in touching on this question that evolutionism reaches the subject-matter of philosophy. Evolutionism

thus consists of two parts: one not philosophical, but only a hasty generalisation of the kind which the special sciences might hereafter confirm or confute; the other not scientific, but a mere unsupported dogma, belonging to philosophy by its subject-matter, but in no way deducible from the facts upon which evolution relies.

(2) The predominant interest of evolutionism is in the question of human destiny, or at least of the destiny of Life. It is more interested in morality and happiness than in knowledge for its own sake. It must be admitted that the same may be said of many other philosophies, and that a desire for the kind of knowledge which philosophy really can give is very rare. But if philosophy is to become scientific--and it is our object to discover how this can be achieved--it is necessary first and foremost that philosophers should acquire the disinterested intellectual curiosity which characterises the genuine man of science. Knowledge concerning the future--which is the kind of knowledge that must be sought if we are to know about human destiny--is possible within certain narrow limits. It is impossible to say how much the limits may be enlarged with the progress of science. But what is evident is that any proposition about the future belongs by its subject-matter to some particular science, and is to be ascertained, if at all, by the methods of that science. Philosophy is not a short cut to the same kind of results as those of the other sciences: if it is to be a genuine study, it must have a province of its own, and aim at results which the other sciences can neither prove nor disprove.

The consideration that philosophy, if there is such a study, must consist of propositions which could not occur in the other sciences, is one which has very far-reaching consequences. All the questions which have what is called a human interest--such, for example, as the question of a future life--belong, at least in theory, to special sciences, and are capable, at least in theory, of being decided by empirical evidence. Philosophers have too often, in the past, permitted themselves to pronounce on empirical questions, and found themselves, as a result, in disastrous conflict with well-attested facts. We must, therefore, renounce the hope that philosophy can promise satisfaction to our mundane desires. What it can do, when it is purified from all practical taint, is to help us to understand the general aspects of the world and the logical analysis of familiar but complex things. Through this achievement, by the suggestion of fruitful hypotheses, it may be indirectly useful in other sciences, notably mathematics, physics, and psychology. But a genuinely scientific philosophy cannot hope to appeal to any except those who have the wish to understand, to escape from intellectual bewilderment. It offers, in its own domain, the kind of satisfaction which the other sciences offer. But it does not offer, or attempt to offer, a solution of the problem of human destiny, or of the destiny of the universe.

Evolutionism, if what has been said is true, is to be regarded as a hasty generalisation from certain rather special facts, accompanied by a dogmatic rejection of all attempts at analysis, and inspired by interests which are practical rather than theoretical. In spite,

therefore, of its appeal to detailed results in various sciences, it cannot be regarded as any more genuinely scientific than the classical tradition which it has replaced. How philosophy is to be rendered scientific, and what is the true subject-matter of philosophy, I shall try to show first by examples of certain achieved results, and then more generally. We will begin with the problem of the physical conceptions of space and time and matter, which, as we have seen, are challenged by the contentions of the evolutionists. That these conceptions stand in need of reconstruction will be admitted, and is indeed increasingly urged by physicists themselves. It will also be admitted that the reconstruction must take more account of change and the universal flux than is done in the older mechanics with its fundamental conception of an indestructible matter. But I do not think the reconstruction required is on Bergsonian lines, nor do I think that his rejection of logic can be anything but harmful. I shall not, however, adopt the method of explicit controversy, but rather the method of independent inquiry, starting from what, in a pre-philosophic stage, appear to be facts, and keeping always as close to these initial data as the requirements of consistency will permit.

Although explicit controversy is almost always fruitless in philosophy, owing to the fact that no two philosophers ever understand one another, yet it seems necessary to say something at the outset in justification of the scientific as against the mystical attitude. Metaphysics, from the first, has been developed by the union or the conflict of these two attitudes. Among the earliest Greek philosophers, the Ionians were more scientific and the Sicilians more mystical.[6] But among the latter,

Pythagoras, for example, was in himself a curious mixture of the two tendencies: the scientific attitude led him to his proposition on right-angled triangles, while his mystic insight showed him that it is wicked to eat beans. Naturally enough, his followers divided into two sects, the lovers of right-angled triangles and the abhorrers of beans; but the former sect died out, leaving, however, a haunting flavour of mysticism over much Greek mathematical speculation, and in particular over Plato's views on mathematics. Plato, of course, embodies both the scientific and the mystical attitudes in a higher form than his predecessors, but the mystical attitude is distinctly the stronger of the two, and secures ultimate victory whenever the conflict is sharp. Plato, moreover, adopted from the Eleatics the device of using logic to defeat common sense, and thus to leave the field clear for mysticism--a device still employed in our own day by the adherents of the classical tradition.

[6] Cf. Burnet, Early Greek Philosophy, pp. 85 ff.

The logic used in defence of mysticism seems to me faulty as logic, and in a later lecture I shall criticise it on this ground. But the more thorough-going mystics do not employ logic, which they despise: they appeal instead directly to the immediate deliverance of their insight. Now, although fully developed mysticism is rare in the West, some tincture of it colours the thoughts of many people, particularly as regards matters on which they have strong convictions not based on evidence. In all who seek passionately for the fugitive and difficult

goods, the conviction is almost irresistible that there is in the world something deeper, more significant, than the multiplicity of little facts chronicled and classified by science. Behind the veil of these mundane things, they feel, something quite different obscurely shimmers, shining forth clearly in the great moments of illumination, which alone give anything worthy to be called real knowledge of truth. To seek such moments, therefore, is to them the way of wisdom, rather than, like the man of science, to observe coolly, to analyse without emotion, and to accept without question the equal reality of the trivial and the important.

Of the reality or unreality of the mystic's world I know nothing. I have no wish to deny it, nor even to declare that the insight which reveals it is not a genuine insight. What I do wish to maintain--and it is here that the scientific attitude becomes imperative--is that insight, untested and unsupported, is an insufficient guarantee of truth, in spite of the fact that much of the most important truth is first suggested by its means. It is common to speak of an opposition between instinct and reason; in the eighteenth century, the opposition was drawn in favour of reason, but under the influence of Rousseau and the romantic movement instinct was given the preference, first by those who rebelled against artificial forms of government and thought, and then, as the purely rationalistic defence of traditional theology became increasingly difficult, by all who felt in science a menace to creeds which they associated with a spiritual outlook on life and the world. Bergson, under the name of "intuition," has raised instinct to the

position of sole arbiter of metaphysical truth. But in fact the opposition of instinct and reason is mainly illusory. Instinct, intuition, or insight is what first leads to the beliefs which subsequent reason confirms or confutes; but the confirmation, where it is possible, consists, in the last analysis, of agreement with other beliefs no less instinctive. Reason is a harmonising, controlling force rather than a creative one. Even in the most purely logical realms, it is insight that first arrives at what is new.

Where instinct and reason do sometimes conflict is in regard to single beliefs, held instinctively, and held with such determination that no degree of inconsistency with other beliefs leads to their abandonment. Instinct, like all human faculties, is liable to error. Those in whom reason is weak are often unwilling to admit this as regards themselves, though all admit it in regard to others. Where instinct is least liable to error is in practical matters as to which right judgment is a help to survival; friendship and hostility in others, for instance, are often felt with extraordinary discrimination through very careful disguises. But even in such matters a wrong impression may be given by reserve or flattery; and in matters less directly practical, such as philosophy deals with, very strong instinctive beliefs may be wholly mistaken, as we may come to know through their perceived inconsistency with other equally strong beliefs. It is such considerations that necessitate the harmonising mediation of reason, which tests our beliefs by their mutual compatibility, and examines, in doubtful cases, the possible sources of error on the one side and on the other. In this there is no opposition

to instinct as a whole, but only to blind reliance upon some one interesting aspect of instinct to the exclusion of other more commonplace but not less trustworthy aspects. It is such onesidedness, not instinct itself, that reason aims at correcting.

These more or less trite maxims may be illustrated by application to Bergson's advocacy of "intuition" as against "intellect." There are, he says, "two profoundly different ways of knowing a thing. The first implies that we move round the object; the second that we enter into it. The first depends on the point of view at which we are placed and on the symbols by which we express ourselves. The second neither depends on a point of view nor relies on any symbol. The first kind of knowledge may be said to stop at the relative; the second, in those cases where it is possible, to attain the absolute."[7] The second of these, which is intuition, is, he says, "the kind of intellectual sympathy by which one places oneself within an object in order to coincide with what is unique in it and therefore inexpressible" (p. 6). In illustration, he mentions self-knowledge: "there is one reality, at least, which we all seize from within, by intuition and not by simple analysis. It is our own personality in its flowing through time--our self which endures" (p. 8). The rest of Bergson's philosophy consists in reporting, through the imperfect medium of words, the knowledge gained by intuition, and the consequent complete condemnation of all the pretended knowledge derived from science and common sense.

[7] Introduction to Metaphysics, p. 1.

This procedure, since it takes sides in a conflict of instinctive beliefs, stands in need of justification by proving the greater trustworthiness of the beliefs on one side than of those on the other. Bergson attempts this justification in two ways--first, by explaining that intellect is a purely practical faculty designed to secure biological success; secondly, by mentioning remarkable feats of instinct in animals, and by pointing out characteristics of the world which, though intuition can apprehend them, are baffling to intellect as he interprets it.

Of Bergson's theory that intellect is a purely practical faculty developed in the struggle for survival, and not a source of true beliefs, we may say, first, that it is only through intellect that we know of the struggle for survival and of the biological ancestry of man: if the intellect is misleading, the whole of this merely inferred history is presumably untrue. If, on the other hand, we agree with M. Bergson in thinking that evolution took place as Darwin believed, then it is not only intellect, but all our faculties, that have been developed under the stress of practical utility. Intuition is seen at its best where it is directly useful--for example, in regard to other people's characters and dispositions. Bergson apparently holds that capacity for this kind of knowledge is less explicable by the struggle for existence than, for example, capacity for pure mathematics. Yet the savage deceived by false friendship is likely to pay for his mistake with his life; whereas even in the most civilised societies men are not

put to death for mathematical incompetence. All the most striking of his instances of intuition in animals have a very direct survival value. The fact is, of course, that both intuition and intellect have been developed because they are useful, and that, speaking broadly, they are useful when they give truth and become harmful when they give falsehood. Intellect, in civilised man, like artistic capacity, has occasionally been developed beyond the point where it is useful to the individual; intuition, on the other hand, seems on the whole to diminish as civilisation increases. Speaking broadly, it is greater in children than in adults, in the uneducated than in the educated. Probably in dogs it exceeds anything to be found in human beings. But those who find in these facts a recommendation of intuition ought to return to running wild in the woods, dyeing themselves with woad and living on hips and haws.

Let us next examine whether intuition possesses any such infallibility as Bergson claims for it. The best instance of it, according to him, is our acquaintance with ourselves; yet self-knowledge is proverbially rare and difficult. Most men, for example, have in their nature meannesses, vanities, and envies of which they are quite unconscious, though even their best friends can perceive them without any difficulty. It is true that intuition has a convincingness which is lacking to intellect: while it is present, it is almost impossible to doubt its truth. But if it should appear, on examination, to be at least as fallible as intellect, its greater subjective certainty becomes a demerit, making it only the more irresistibly deceptive. Apart from self-knowledge, one of the most

notable examples of intuition is the knowledge people believe themselves to possess of those with whom they are in love: the wall between different personalities seems to become transparent, and people think they see into another soul as into their own. Yet deception in such cases is constantly practised with success; and even where there is no intentional deception, experience gradually proves, as a rule, that the supposed insight was illusory, and that the slower, more groping methods of the intellect are in the long run more reliable.

Bergson maintains that intellect can only deal with things in so far as they resemble what has been experienced in the past, while intuition has the power of apprehending the uniqueness and novelty that always belong to each fresh moment. That there is something unique and new at every moment, is certainly true; it is also true that this cannot be fully expressed by means of intellectual concepts. Only direct acquaintance can give knowledge of what is unique and new. But direct acquaintance of this kind is given fully in sensation, and does not require, so far as I can see, any special faculty of intuition for its apprehension. It is neither intellect nor intuition, but sensation, that supplies new data; but when the data are new in any remarkable manner, intellect is much more capable of dealing with them than intuition would be. The hen with a brood of ducklings no doubt has intuitions which seem to place her inside them, and not merely to know them analytically; but when the ducklings take to the water, the whole apparent intuition is seen to be illusory, and the hen is left helpless on the shore. Intuition, in fact, is an aspect and development of instinct, and, like all instinct, is

admirable in those customary surroundings which have moulded the habits of the animal in question, but totally incompetent as soon as the surroundings are changed in a way which demands some non-habitual mode of action.

The theoretical understanding of the world, which is the aim of philosophy, is not a matter of great practical importance to animals, or to savages, or even to most civilised men. It is hardly to be supposed, therefore, that the rapid, rough and ready methods of instinct or intuition will find in this field a favourable ground for their application. It is the older kinds of activity, which bring out our kinship with remote generations of animal and semi-human ancestors, that show intuition at its best. In such matters as self-preservation and love, intuition will act sometimes (though not always) with a swiftness and precision which are astonishing to the critical intellect. But philosophy is not one of the pursuits which illustrate our affinity with the past: it is a highly refined, highly civilised pursuit, demanding, for its success, a certain liberation from the life of instinct, and even, at times, a certain aloofness from all mundane hopes and fears. It is not in philosophy, therefore, that we can hope to see intuition at its best. On the contrary, since the true objects of philosophy, and the habits of thought demanded for their apprehension, are strange, unusual, and remote, it is here, more almost than anywhere else, that intellect proves superior to intuition, and that quick unanalysed convictions are least deserving of uncritical acceptance.

Before embarking upon the somewhat difficult and abstract discussions which lie before us, it will be well to take a survey of the hopes we may retain and the hopes we must abandon. The hope of satisfaction to our more human desires--the hope of demonstrating that the world has this or that desirable ethical characteristic--is not one which, so far as I can see, philosophy can do anything whatever to satisfy. The difference between a good world and a bad one is a difference in the particular characteristics of the particular things that exist in these worlds: it is not a sufficiently abstract difference to come within the province of philosophy. Love and hate, for example, are ethical opposites, but to philosophy they are closely analogous attitudes towards objects. The general form and structure of those attitudes towards objects which constitute mental phenomena is a problem for philosophy; but the difference between love and hate is not a difference of form or structure, and therefore belongs rather to the special science of psychology than to philosophy. Thus the ethical interests which have often inspired philosophers must remain in the background: some kind of ethical interest may inspire the whole study, but none must obtrude in the detail or be expected in the special results which are sought.

If this view seems at first sight disappointing, we may remind ourselves that a similar change has been found necessary in all the other sciences. The physicist or chemist is not now required to prove the ethical importance of his ions or atoms; the biologist is not expected to prove the utility of the plants or animals which he dissects. In

pre-scientific ages this was not the case. Astronomy, for example, was studied because men believed in astrology: it was thought that the movements of the planets had the most direct and important bearing upon the lives of human beings. Presumably, when this belief decayed and the disinterested study of astronomy began, many who had found astrology absorbingly interesting decided that astronomy had too little human interest to be worthy of study. Physics, as it appears in Plato's Timæus for example, is full of ethical notions: it is an essential part of its purpose to show that the earth is worthy of admiration. The modern physicist, on the contrary, though he has no wish to deny that the earth is admirable, is not concerned, as physicist, with its ethical attributes: he is merely concerned to find out facts, not to consider whether they are good or bad. In psychology, the scientific attitude is even more recent and more difficult than in the physical sciences: it is natural to consider that human nature is either good or bad, and to suppose that the difference between good and bad, so all-important in practice, must be important in theory also. It is only during the last century that an ethically neutral science of psychology has grown up; and here too ethical neutrality has been essential to scientific success.

In philosophy, hitherto, ethical neutrality has been seldom sought and hardly ever achieved. Men have remembered their wishes, and have judged philosophies in relation to their wishes. Driven from the particular sciences, the belief that the notions of good and evil must afford a key to the understanding of the world has sought a refuge in philosophy. But

even from this last refuge, if philosophy is not to remain a set of pleasing dreams, this belief must be driven forth. It is a commonplace that happiness is not best achieved by those who seek it directly; and it would seem that the same is true of the good. In thought, at any rate, those who forget good and evil and seek only to know the facts are more likely to achieve good than those who view the world through the distorting medium of their own desires.

The immense extension of our knowledge of facts in recent times has had, as it had in the Renaissance, two effects upon the general intellectual outlook. On the one hand, it has made men distrustful of the truth of wide, ambitious systems: theories come and go swiftly, each serving, for a moment, to classify known facts and promote the search for new ones, but each in turn proving inadequate to deal with the new facts when they have been found. Even those who invent the theories do not, in science, regard them as anything but a temporary makeshift. The ideal of an all-embracing synthesis, such as the Middle Ages believed themselves to have attained, recedes further and further beyond the limits of what seems feasible. In such a world, as in the world of Montaigne, nothing seems worth while except the discovery of more and more facts, each in turn the deathblow to some cherished theory; the ordering intellect grows weary, and becomes slovenly through despair.

On the other hand, the new facts have brought new powers; man's physical control over natural forces has been increasing with unexampled rapidity, and promises to increase in the future beyond all easily

assignable limits. Thus alongside of despair as regards ultimate theory there is an immense optimism as regards practice: what man can do seems almost boundless. The old fixed limits of human power, such as death, or the dependence of the race on an equilibrium of cosmic forces, are forgotten, and no hard facts are allowed to break in upon the dream of omnipotence. No philosophy is tolerated which sets bounds to man's capacity of gratifying his wishes; and thus the very despair of theory is invoked to silence every whisper of doubt as regards the possibilities of practical achievement.

In the welcoming of new fact, and in the suspicion of dogmatism as regards the universe at large, the modern spirit should, I think, be accepted as wholly an advance. But both in its practical pretensions and in its theoretical despair it seems to me to go too far. Most of what is greatest in man is called forth in response to the thwarting of his hopes by immutable natural obstacles; by the pretence of omnipotence, he becomes trivial and a little absurd. And on the theoretical side, ultimate metaphysical truth, though less all-embracing and harder of attainment than it appeared to some philosophers in the past, can, I believe, be discovered by those who are willing to combine the hopefulness, patience, and open-mindedness of science with something of the Greek feeling for beauty in the abstract world of logic and for the ultimate intrinsic value in the contemplation of truth.

The philosophy, therefore, which is to be genuinely inspired by the scientific spirit, must deal with somewhat dry and abstract matters, and

must not hope to find an answer to the practical problems of life. To those who wish to understand much of what has in the past been most difficult and obscure in the constitution of the universe, it has great rewards to offer--triumphs as noteworthy as those of Newton and Darwin, and as important in the long run, for the moulding of our mental habits. And it brings with it--as a new and powerful method of investigation always does--a sense of power and a hope of progress more reliable and better grounded than any that rests on hasty and fallacious generalisation as to the nature of the universe at large. Many hopes which inspired philosophers in the past it cannot claim to fulfil; but other hopes, more purely intellectual, it can satisfy more fully than former ages could have deemed possible for human minds.