

Thesis submitted for Degree of Doctor of Philosophy

The Development and Significance of English Philosophic Method

by

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Note as to Publication

This piece of work is one part of a Study of the Method and Development of English Philosophy. The other part will consist of a series of chapters on the General, as distinguished in the Methodological, Development. Two of these have already appeared as articles in Mind (v. 51, July 1904, and 61, January 1907). The two remaining chapters are in M.S., though they are not yet quite reached completion. Both parts are to be revised and augmented before publication. (Offprints of the two published papers accompany the Thesis.)

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CHAPTER I.

(Introductory)

General THE SIGNIFICANCE OF METHOD.

Throughout the history of philosophy each successive phase of thought has claimed to be an advance on those which preceded it, not only in respect of the truth set forth in its conclusions, but also in the method whereby its conclusions have been attained. And the coincidence is no casual one; for the advance in method has always been considered the precondition of the increased attainment of truth. Such errors as previous systems of thought seemed to contain and their failure to reach more adequate conclusions have been regarded as due more than anything else to some defect in their mode of conceiving or of assailing philosophic problems. To correct such deficiencies and by this means to put us in the way of better results has been the foremost claim made at every new step that philosophy has taken. Each different phase in the history of philosophy is thus primarily the forging of a new instrument for the attainment of truth, or the reforging of an old one; and the philosophic development is coincident with and dependent on advance in the method by which the results are obtained. 1

1 Cp. "A new method is characteristic of every great advance in philosophical thinking". Adamson, Development of Modern Philosophy, vol. i p. Lewes's History of Philosophy, notwithstanding its hostile attitude to the subject, emphasizes the same conception.

Examples of this principle in the general history of philosophy are not /

not far to seek. The whole modern movement in philosophy on the Continent begins with a treatise on method. Indeed Descartes not only puts method in the forefront of his thinking; he asserts that the question of method is the determining question in philosophy - the one on our answer to which all other knowledge depends. Once the correct method is apprehended, the rest of the work will readily follow and the conclusions reached will be both uniform and certain.¹ Similarly Kant views his epoch-making investigation as presenting not an entire system of knowledge but a new conception of its method;² and the entrance of philosophy on "the sure path of science" as awaiting only the discovery of its proper tasks and mode of procedure. In ancient philosophy the same principle holds. The deepest line of demarcation in the Greek development is that between the ontologizing of the pre-Socratic thinkers and the ~~critical~~ inquiries of Plato and Aristotle; and this line is marked by the appearance of Socrates's "conceptual" method. It is true that the Socratic method has its most obvious significance in giving expression to the inductive character of all investigation. But this is only one aspect of its meaning. In its deepest import it represents the transition from the investigation of things "in themselves" to the study of our apprehension of things.³

1. Discours de la méthode, pt. i; Regulae ad directionem ingenii, reg. 1, 4, and 8. Cp. N. Smith's Studies in the Cartesian Philosophy, pp. 23-6.

2. "Sie (die Kritik der reinen Vernunft) ist ein Tractat von der Methode, nicht ein System der Wissenschaft selbst". Krit.d.r.V. pref. to 2nd ed.

3. Cp. Plato, Phaedo, 99d-100a.

The fact that the problem of method has been a fundamental one at the various stages in the development of philosophy, and that a reconsideration of method has always been regarded as an essential feature in its progress and an indispensable condition of better results, is a proof that philosophy and its method are indissolubly connected. It is not as though the method were a question by itself, and apart from it there might be some advance in the conclusions reached. On the contrary, the intimacy of the connexion raises the presumption that philosophy and its method are not so much two things as one, or at least that the question of method is not a mere preliminary but an integral part of philosophy itself.

The design of the present essay is to study the nature of philosophic method as it is presented and illustrated in a particular example of philosophic development. "All systems of philosophy", it has been said, "are only the development of a single philosophy".¹ And similarly it may be said that each different course of philosophic development is but a special instance of the unfolding of the method and principles of the one philosophy that works itself out in all. Whatever are the differences between philosophic systems they present themselves to the sympathetic student as so many aspects or portions of a whole. And the various courses which the history of philosophy has taken in different periods and countries likewise exhibit in common certain general principles, of which they are thereby shown to be only particular examples. To this correlation and community underlying the oppositions of philosophy generally, the variations in method are no exception. Rather does every method appear to be a part or a partial expression of a single method.

1. Erdmann (following Hegel), History of Philosophy (English trans. vol. i, introd. §5. Cp. Ferrier's remark: "The history of philosophy is philosophy itself taking its time". Greek Philosophy (Philos. Remains, vol. ii), §1.

It seems not unreasonable therefore to take one development as illustrative of all. If we can discover the essential features in one process of philosophic development, we shall have gone far on the way to seeing the significance of any such development. And the principle that makes one sequence of doctrines typical of all, likewise supports the prior idea of studying the character and connexions of philosophic systems by reference to their development. For it is only in so far as any particular doctrine or standpoint gives proof of being able to adapt itself to a variety of conditions and applications that it vindicates itself as a sound and valuable conception; and it is in the substantial identity underlying the modification which such variations entail that its essential character is disclosed. There seems ample warrant therefore for seeking the principles of philosophic method in a concrete case of its development. ~~We may hope thereby to get some precise notion of the answer to our problem.~~

In no portion of the history of philosophy is the question of method more interesting and instructive than in the English development. The English philosophy may be taken as forming a single movement within the wider movement of modern philosophy as a whole. And the significance attaching to its starting-point and mode of procedure is such that these have come to be regarded as constituting the distinctively English method in philosophy. Yet it too has its stages and advances. Within their wider agreement the several exponents of English philosophy present differences of standpoint which proclaim **variance** in the Particular view

that is taken of philosophic method. The course of development is conditioned by growing insight into the meaning of the starting-point and procedure that characterize the movement as a whole. And variations in the doctrinal conclusions that are reached are the outcome of these differences of standpoint and method. The philosophic development in its varying phases is thus the correlate of a methodologic advance. Procedure and results alternately influence each other; so that in each reaction and counter-reaction doctrine and method are mutually involved. The development of method in English philosophy consists in the gradual working towards a wider and more adequate viewpoint, by the removal of presuppositions that unduly limit the starting-point and warp the procedure and conclusions. But the removal of assumptions is not a reversal but a development of the original standpoint and method. The later point of view is the earlier, rid of erroneous or irrelevant presuppositions and come through trial and conflict to a fuller knowledge of itself.¹

1. See, for illustration of the underlying agreement, Reid's statements as to the method of his predecessors in English philosophy: "They have put us in the right road - that of experience and accurate reflexion". Their procedure "is the only one by which any real discovery in philosophy can be made". Works (ed. Hamilton) i, 97, 101. And as an expression of divergence from a previous standpoint, Hamilton's distinction between the methods of "observation" and "analysis" - or, generalization of the facts of experience and investigation of its necessary implicates. Lectures on Metaphysics, ii, 193. Both statements are referred to more particularly below.

To turn this abstract statement into a concrete one: - The one common feature throughout the variations of English philosophy is the insistence

on experience as the ultimate starting-point and basis. This constitutes an element of agreement underlying opposing principles. The antagonisms of doctrine reflect differences in methodologic standpoint; and these diversities of method are differences of view as to what the foundation on experience implies. The various modes of inquiry - the various ways of setting about the establishment of a body of philosophic doctrine - may accordingly, notwithstanding the differences they present, be regarded as severally exhibiting the view its exponent takes as to what constitutes the genuine experiential method in philosophy. Briefly, the stages of English philosophic method are steps in the discovery of what is involved in the principle that experience is the basis and ultimate criterion of truth.

Here then is a suitable field for the study of philosophic method. To trace the development from one stage to another, and to see how at each step the initial procedure becomes modified while yet retaining its essential meaning, will be to learn something concerning the nature of method in philosophy and the place philosophy and its method occupy in the scheme of knowledge.

The thesis I maintain in the following pages, as the outcome of this study, is: -That the method of philosophy is preeminently and distinctively the experiential method; in~~as~~^{so} much as philosophy alone undertakes to investigate experience without prior suppositions as to its character or content, while the use of such presuppositions marks at once any branch of knowledge that is not philosophy but one or another of the special sciences: that philosophy therefore logically precedes as well as follows /

follows the sciences, since without it neither their procedure nor their conclusions would have definite value: and that the distinction and relation of philosophy and science are intrinsic features of the method of knowledge generally. More fully and definitely: The one method of all knowledge - of philosophy as well as of science - is the method of experience and the distinctively philosophic problem is reached and followed just in so far as experience, as the only source and means of knowledge, is taken in its full or concrete and therefore actual nature, instead of being limited or modified through preconceptions belonging to more special inquiries. Thus, so far from the method of science being experiential, while that of philosophy is not, the distinctive method of philosophy is nothing but the adoption of the fundamental view-point for the investigation of experience. Moreover, since it is by abstraction from this ultimate standpoint that the sciences diverge from the common centre or basis, it is philosophy alone that can either justify their outlook and procedure or interpret and unite their results. And the character of any philosophical system or reconstruction is determined by its conception of the actual and ultimate nature of experience, and of the order and relation of the various planes or levels (so to call them) at which experience is taken in the several particular spheres of knowledge.

CHAPTER II.

THE UNITY OF KNOWLEDGE AND THE DIFFERENTIATION OF SCIENCE FROM PHILOSOPHY.

The English philosophy in all its successive stages recognizes as its ~~common~~ ^{Common} origin and chief source of inspiration the new impulse to investigation in all departments of knowledge which marks the beginning of the modern era. Of this era the typical national spokesman is Francis Bacon. And here at the outset we are met by the fact that the first great English philosopher of the modern period is known preeminently as an expounder of method. The Baconian philosophy is indeed in common usage synonymous with the Baconian method. The place that Bacon occupies as the first and representative English philosopher is due above all to his propounding a doctrine of the method of knowledge; and his philosophy is bound up with this method of knowledge in such a way as to have become inseparable from it. What then is Bacon's philosophy in that sense or aspect in which it is identical with his doctrine of method? ¹

1. The relation of the methodological or "epistemological" **to** the constructive or "ontological" aspect of philosophy is considered in ch. vi.

The Baconian method, like the Socratic, is commonly taken as meaning primarily the inductive aspect of scientific inquiry, and its founder as concerned mainly in enforcing and expounding this and showing its application/

application in various fields of knowledge. But Bacon's work has a much wider and deeper significance than what belongs to it as an exposition either of the essentials or the details of inductive procedure in the usual acceptation of the term. His philosophic writings are a sustained and elaborate expression, on the one hand, of the unity of all human knowledge, and on the other, of the need of an ever renewed and revised appeal to experience as its one ultimate source. The beginning anew from experience, and the interpenetration of suggestions from the most widely sundered spheres of inquiry - these are the first principles of Bacon's philosophy. His "new method" is the means or instrument for securing to knowledge the character of truth to experience, marked by the solidity attaching to a connected whole.

Bacon's expressly declared task is the renovation of science. He will call men to the founding of a new and compact fabric of knowledge; which involves at once a fresh and open look at all the realms of human experience, and an understanding of the significance of the work in which they severally engage as contributing to the execution of a common plan, and the upbuilding of a firm edifice where every part fits into another and adds to the security of the whole. To outline such a scheme of science and show the means necessary for its attainment ^s in his own share of the work. His writings are a series of inspiring utterances in which he expounds and illustrates a philosophy of science. In other words, the aim of his philosophy is to exhibit the method of knowledge in the widest sense of both these terms, and to initiate a system of inquiry in accordance with it.

In enunciating the principles of a vast system of scientific inquiry Bacon is himself inspired by the thought that the purpose of the whole undertaking is - to serve the needs and improve the condition of mankind. Knowledge, he reiterates, is the great instrument for the uplifting and advancement of man; since this can be effected only by recognizing the inevitable conditions of existence and understanding the means of using them in the interest of human aspirations. Thus knowledge and power are coincident: truth and utility go hand in hand.¹

1. "Man, the minister and interpreter of Nature, does and understands just so much as he may have discerned concerning the order of Nature by observation and reflexion: his knowledge and his power extend no further". *Novum Organum*, *bk. i*, aph.1. "Human knowledge and human power coincide; because ignorance of the cause hinders the production of the effect. For Nature is not conquered save by obedience: and what in contemplation stands as a cause, the same in operation stands as a rule or direction". Aph.3. Cp.aph.124, 129.

It is in his design of promoting the acquisition and application of knowledge "for ^{the} use and benefit of mankind" (*usui et commodis hominum*) that we find the whole spirit and motive of Bacon's philosophy, as also the key to its main principles and even to many of its details.

The conception of knowledge that has inspired English philosophy from the outset is thus intrinsically and emphatically practical. It would be a fruitful field of inquiry to trace the influence or the recurrence in the work of subsequent English philosophers of Bacon's teaching as to the essentially practical nature of the aims and processes of/

of knowledge.¹ The worth and dignity of science, in the view of Bacon and his successors, consist in its being in the highest sense useful, in its serving the great purpose of enabling the fulfilment of the wants and aspirations of mankind. The whole trend of English philosophy is in this direction. Its earnestness, its fruitfulness, its very hesitations and self-limitations can be understood only in view of this practical tendency. What concerns us here is that at the very outset of English philosophy it is this spirit that determines its characteristic attitude and method. The experiential character of all living or efficient knowledge; the interdependence and interaction of different spheres of investigation; the conception of philosophy as essentially the basis and system of the several sciences; all these principles of Bacon's philosophy are the outcome or the expression of the inherent applicability of genuine knowledge. That knowledge is one in its motive or purpose and that it is one in its source or nature are facts that are inseparable.

Bacon's philosophy then is primarily a plea for the unity of human knowledge. What he desiderates in the existing state of knowledge is a recognized and understood connexion between the different sciences. Here are avowed "knowledges", he says in effect, but where is knowledge? where is science as a whole?. Only when the sciences cease from isolation and appreciate their points of contact can there be a living body of knowledge. Their efficiency depends on the possibility of amending and supplementing each by each, on each getting from and giving to the others vital suggestions and means of corroboration or correction.

"Knowledge/

¹ This subject is taken up in one of the chapters on the General Development.

"Knowledge is power": but the power resides in intelligent union and serviceable co-operation. Bacon begins his philosophy therefore with a review of knowledge or a survey of the sciences undertaken with a view to ascertaining their connexions, their deficiencies so long as they remain apart, and their possibilities when taken together as forming a whole or system. The first part of his task, that is, is to outline a scheme of knowledge and describe its main features both negative and positive and the mutual relations of its parts; while the second is to depict in detail its modes of procedure.¹ His philosophy is thus in general an attempt to supply a basis for an entire system of knowledge and to indicate the place its various members must occupy and the function they must exercise to give strength and unity to the whole. As Kuno Fischer happily puts it, "Bacon wished to awaken life in science. Hence, above all, he had to fashion a body capable of life; that is to say, an organization in which no part should be wanting, and all the parts of which should be properly connected".²

1. The former is the theme of the Advancement of Learning and its amplified translation, the De Augmentis; the latter of the Novum Organum.

2. K. Fischer's Francis Bacon, English trans., p.280

Bacon's method in its widest significance means the principles by which he conceives the unity of science to be attainable. If the sciences are to be unified, and human knowledge organized into an efficient system, it must be according to a definite plan and mode of procedure/

procedure. The means—stated in the most comprehensive form - whereby such a body of knowledge can be secured consist, in Bacon's view, in proceeding always step by step from one truth or from one sphere to another, making sure of the transition from one to the other, and at the same time in making use of every suggestion that may serve as an intermedium between different facts or sets of facts. These are the two forms or aspects of the appeal to experience as the common and single source of human knowledge. The first involves that at **each** step we set aside preconceived notions and found securely on experience; the second that we make each portion of knowledge a clue to the acquisition and advancement of others. As we shall see later,¹ these are the two aspects of Bacon's so-called inductive method of science. But they are not only the principles for the advancement of knowledge in the various spheres of inquiry taken separately, they are also the means of connecting the several parts of knowledge so as to form a whole.

1. Ch.iii, pp.

Bacon compares the several sciences to the branches of a tree which issue from a common stem. They are all portions or divisions of "one universal sciencé" from which they have been gradually differentiated. And just as the branches of a tree derive their strength from their union with the parent stock; so the vitality of any branch of knowledge depends on its being in living union with the whole.¹ No science, Bacon maintains, can be "operative" or effective except through reference to the general scheme and the fundamental principles of all the sciences; since/

since particular studies are apt to be unstable and unprofitable unless they are grounded in universality. "An error", he says, "which impedes the advancement of knowledge", "is that after the distribution of particular arts and sciences, men have abandoned universality or philosophia prima: which cannot but cease and stop all progression. For no perfect discovery can be made upon a flat or a level: neither is it possible to discover the more remote and deeper parts of any science, if you stand but upon the level of the same science, and ascend not to a higher science".²

This "original or universal philosophy", which is the "common parent of the special sciences, Bacon designates primary philosophy (philosophia prima)³. It is not one among the other sciences; for it is distinguished from them by its scope rather than its subject-matter, dealing as it does with the main principles of all sciences⁴ and representing rather the common path of knowledge before its partition into separate subjects.

1. Advancement of Learning, Ch.ii, ch.5, §2. This metaphor, expressive of the unity of the sciences and the necessity for subordinating their particularity to some kind of universality, recurs in Descartes and Comte with the same significance "The whole ~~of~~ philosophy is like a tree, of which the roots are metaphysics; the trunk is physics; and the branches which go out from this trunk are all the other sciences". Descartes, Principia Philosophiae, preface. "The sciences are not radically separate, but all branches from the same trunk". Comte, Positive Philosophy (trans. Martineau), i, 7.
2. Adv. of L., i, 5, §5; cp. ii, pref., §8.
3. Bacon himself translates "primitive or summary" philosophy; the two words referring to its double character of preceding the particular sciences as their origin, and resuming them as their goal.
4. De Augmentis, Ch.iii, ch.1.

The content of this general philosophy (or general science, for Bacon uses "science" and "philosophy" almost synonymously) consists, he says, of such principles and conceptions as do not fall within the compass of any of the special sciences but are common to them all, and are therefore of a higher or more comprehensive nature than those belonging especially to one particular sphere.¹ These "common axioms" are significant of the unity and interdependence of the sciences and constitute an important factor in their progress.

Bacon supports this general statement by exemplifying the common principles of knowledge and indicating how they may operate in the interconnexion and mutual advancement of the sciences. This forms indeed the chief part of his own material (as distinct from formal or methodological) contribution to the unification of knowledge. Throughout his writings there constantly occur - distinct from, though thoroughly interwoven with and illustrative of, his delineation of method - observations and principles calculated to throw light from one sphere of knowledge on another. Just as, when urging the use of experiment in scientific inquiry, he insists on the need of "light-bringing" before fruit-bearing" experiments,² so too in the same wide spirit he is ever seeking to catch gleams which may shed light on the most various provinces of knowledge.

1. Adv. of L., ii, 5, 62; De Augm., iii, 1.

2. Nov. Org., i, 70, 99, 121.

He notes in this way the coincidence of the mathematical axioms about equalities with the rules of the logical syllogism on one hand and those of the administration of justice on the other. He points out correspondences/

pendences between principles of physics and politics, of music and rhetoric of organic and inorganic nature,¹

1. Adv. of L., ii, 5, §3; De Augm., iii, 1; Nov. Org., ii, 27. ^x "The Essays contain, compressed into the smallest compass, many of the best sayings of the philosophic works, based on, and occasionally illustrated by, some of the most fundamental axioms of Bacon's philosophy. But their peculiar merit is that they not only imprint on the memory a number of thoughts good in themselves, and ⁺stimulate the reader to follow still further on that path of analogy and to reach similar thoughts for himself. For the basis of the Essays, as of the philosophical works, is this fundamental thought, that in social life, as in non-human nature, results can only be attained by knowing causes, and that the processes of human nature may often be not only illustrated, but even ascertained and accomplished, by the application of certain axioms common alike to animate and inanimate nature. Thus the Essay on Ambition is based upon the unexpressed axiom that "All things move violently to their place, but easily in their place"; the Essay on Fortune has for its basis the notion that a combination of many small causes often escapes notice; "The way of fortune is like the milken way in the sky, which is a meeting, or knot, of small stars, not seen asunder but giving light together. So are there a number of little and scarce discerned virtues, or rather faculties and customs, that make men fortunate". Herein consists the peculiar fitness of the metaphors so richly strewn throughout the Essays: they are often more than illustrations, they are the origins of the thought which the author presents to us."

Bacon thus finds the means of realizing the community of doctrine and truth in the different sciences in the principle of analogy. But while warning us against the misuse of the principle by the pursuit of all sorts of fanciful analogies, he insists that real correspondences, such as are everywhere discoverable in nature and experience, are far from being chance/

technically calls them. Cp. E. St. Abbott (Francis Bacon; His Life and Works,

pp. 446-7): "The Essays ...

+ abounding in practical use, but also reveal the path by which the author arrived at them and stimulate ...

chance coincidences or merely superficial resemblances: they signify fundamental identity of character and law underlying nature's variety. "These are not", he says, "only similitudes, as men of various observation may conceive them to be, but the same footsteps of nature treading or printing upon several subjects or matters."¹ It is in virtue of such correspondences that we are enabled to unify knowledge by discovering the connexions that subsist between its several provinces, both as regards content and explanation. The detection of conformities and relations is in fact a prime requisite of progress alike in the separate provinces of knowledge, each for itself, and in their organization into a coherent system.²

The function of philosophy then, in Bacon's view, is³ to mediate between the sciences by making effective that possibility of their final unity which is indicated by the common origin of these diverse branches of knowledge, but which is apt to be hindered rather than fostered by their growing specialization and semi-independence. The correlate of thoroughgoing particularization is ever-deepening unification; and any real and lasting progress is attainable in the interpretation of nature and experience only through a comprehensive, albeit general, view of the whole as a counterpart of detailed investigation of the parts. An insight into the general bearings and relations of particular phenomena and their laws Bacon esteems peculiarly characteristic of the philosophic mind and peculiarly contributive to the advancement of knowledge. And his own genius for analogy is a case in point. Bacon's conception and use of analogy are indeed at once an integral part of his account of the details of scientific process/

process and a mark of the wider import of his method and the essentially philosophic character of his work. For it is by his aptitude in detecting and suggesting such affinities that he is enabled, in all his writings, not only to enforce great truths by example and illustration drawn from every sphere, but to scatter thoughts fitted to stimulate and guide future inquiry. His philosophy is thus expressly and intrinsically a seed-field for the sciences, -supplying pregnant hints to such of them as he finds "deficient" and anticipating those that are as yet only "desiderate".

1. Adv. of L., ii, 5, § 3.

2. Nov. Org., ii, 27. Bacon further extends the use of analogy to bridge the gulf between philosophy and religion. While excluding religion or theology—at least in certain of its parts or aspects—from distinctively human knowledge, and regarding it as an independent realm of truth with no possibility either of mutual support or of contradiction between its doctrines and the findings of science; he still suggests a means of discerning the unity of all truth. There is a certain similitude, he holds, between the principles of philosophy and the doctrines of religion, such that the one can be used to illustrate and apply, though not to prove the other. It is in respect of the impossibility of proving the mysteries of religion that ~~there~~ lacks a manifest congruity between the two regions; for these mysteries are inaccessible to reasoning or argument, except so far as regards elucidating them by means of analogy and deriving from them inferences for the guidance of conduct. But this is not incompatible with the belief or assurance of an ultimate harmony of truth. Adv. of L., ii, 6; 25, §§ 1-7. Cp. Ellis's Preface to the Philosophical Works, p. 64.

3. Cp. Kuno Fischer's remark: "Fundamental philosophy, in Bacon's sense of the word, is nothing but the idea of analogy applied to the sciences". Francis Bacon, English trans. p. 249.

There is a further point in Bacon's conception of the interconnexion of the sciences. Not only does he emphasize the value of suggestions that may lead to their closer linkage and combined progress: he asserts a more or less definite order of progression¹ apart from which it is hopeless to expect much outcome from our labours. He maintains that the mental and moral sciences must be rooted in and nourished by the physical or natural. Indeed at times Bacon almost seems to identify "natural" philosophy - "the great mother of sciences" - with the "primary" or universal philosophy which ~~is~~ at once the source and the bond of them all. A main cause of barrenness and want of growth in the sciences is, he says, their being severed from physical science or natural philosophy and allowed to take their own course without the life that would be imparted to them by contact with it. "All arts and sciences, if torn from this root, are trimmed perhaps and adapted to use, but grow not much." Fertility and progress are impossible "unless the principles of natural philosophy are applied to the various sciences and these in turn referred back to it".²

1. Cp. Comte's conception of a "hierarchy of the sciences".

2. Nov.Org., i, 79,80.

It is not impossible however to reconcile Bacon's statements. His assertion that the natural sciences must precede and support the others is not inconsistent with his conception that the sciences owe their unity and interdependence to their being based on common principles. Although he finds the seminal concepts of science in physics, he does not seek to dispense with a general or inclusive discipline and make one special science^{the source} of all the rest. He distinctly maintains that the sciences form

a system in^{as} ~~so~~ much as they are each and all but divergent portions of the "main and common way" of knowledge, which logically precedes its differentiations. What is most characteristic in his contention that physics is the basal science on which the others must be built, and that apart from it even such sciences as logic and ethics and politics tend to be superficial and unprogressive, is - what characterizes also, ~~so~~ we shall see, his theory of inductive method - his perception of the need of proceeding step by step from the rudiments of knowledge to its more advanced stages, instead of engaging on the higher to the neglect of the lower or passing from the one to the other without a proper intermedium.

It is true historically that the physical or natural sciences attain a measure of certainty and solidity before the mental and moral sciences. And what Bacon's counsels signify is that this historical priority has a logical foundation, and that its implications should be kept steadily in view. That the lower sciences are earlier differentiated than the higher from the original unity of philosophy and science, is a proof rather than otherwise that the latter and not the former are more akin to the fundamental discipline itself. For it implies that they can remain indistinguishable from it till a later stage of the process of differentiation is reached, and continue to perform their function in the whole, though with less individual vigour and independence, after the others have ceased to have an equal share in the common or indifferentiated work of all. But it is none the less true that as differentiation proceeds the logical implication of the historical order should be a guiding principle for connecting and advancing the sciences. This implication is, that principles/

principles that are more readily recognized and applied under abstract or general conditions are yet invaluable as a means of explicating more concrete spheres of experience, from which moreover they may have been originally though unwittingly drawn. This accords with Aristotle's dictum that it is necessary to begin always from cases, or aspects of fact, to which the application of a principle is in some degree evident, and proceed thence to the full significance of the principle itself.¹ And this is a maxim of method that Bacon not only accentuates in his exposition of scientific procedure but follows in his own thought. The fundamental notions and principles of the various sciences can, he holds, be rightly understood only from the point of view of their common origin in general philosophy; but the diverse applications of these common principles must yet be used as an ascending series of means for apprehending their true import. There is thus no insuperable contradiction between the place Bacon assigns to physics as the rudimental or basal science and the function he ascribes to primary philosophy as the "one universal science" from which the others diverge; whatever inadequacies there are in the account he gives of the generic discipline and its precise distinction from the special sciences.²

1.

2. It requires to be noted that in Bacon's terminology "meta-physic" is distinct from philosophia prima and means the higher and perhaps somewhat problematic portion or stage of physics. He describes it as dealing with constant as distinct from variable causes, and also with final causes or reasons in so far as these are a fit subject for physics. This account of its contents makes it correspond partly to physics in its explanatory/

explanatory aspect and partly to what some would regard rather as philosophical construction on the basis of physics. (Adv. of L., ii, 7³⁶, 2-7; De Augm., iii, 4; Cp. Nov. Org., ii, 9). In this context Bacon likens the sciences to pyramids - each based on observational and experimental inquiries, rising gradually from the description to the connexion of phenomena, and culminating possibly in a "summary" law which would unite and explain their variety. Here again unity and progression are the characteristic notions.

A first principle of Bacon's thought then is that there is an essential unity between the various sciences, and likewise between science and philosophy. The particular sciences are members of a whole or branches of a common stem; and philosophy is not so much a separate discipline as itself the unity of all the sciences.

CHAPTER III.

THE TWOFOLD CHARACTER OF SCIENTIFIC METHOD.

A. The Inductive Aspect

The design of Bacon's philosophy, as we have already seen, is to elucidate the means requisite for forming a systematic body of knowledge which may be gradually augmented by the attainment of further results in the various spheres, as well as modified by their connexions with those already established. The first requisite is that the several branches of inquiry be recognized as in fact only differentiated members of a common stem, and as having fibres that bind them inseparably to one another and the whole; so that any severance of them can be wrought only to the detriment of each and all. But in Bacon's view the sciences form a system or unity not only as having a common origin and definite lines of connexion; they are one also in respect of the fundamental features of their method or logical procedure and as all alike having their ultimate criterion in the common ground of experience. This truth is indeed the complement of the other. The concrete unity of knowledge and its common experiential method are aspects of a single principle. And Bacon's assertion of this complementary truth is equally characteristic of his philosophy. Even if we take the Baconian philosophy as primarily an exposition of inductive process it is still true that Bacon's method gets its whole character from his conceiving of induction - and induction as he specifically expounds it - as the method of experience. Both in its origin and in its details his doctrine of method owes its immediate impulse to his zeal for that "closeness/

"closeness to fact"¹ which is the distinctive feature of an experiential philosophy. The trend of his counsels is always towards the renouncement of prepossessions and the reinvestigation of evidences - a return to experience. But what this implies is, that in fact Bacon's teaching is quite inadequately characterized by describing it as a resuscitation of inductive procedure. It has at once a wider and a narrower character than this.

What Bacon finds predominant in the method of his predecessors is not so much a failure to recognize that the source of knowledge is experience and its starting-point the study of particular facts; but that they pass too hastily to generalities. Granted that they begin from particular experiences, they proceed at once to generalizations which are at best merely first approximations to truth, but which they proceed to treat as not only true but axiomatic and appeal to with the utmost confidence in support of all their subsequent conclusions. It is this process of setting up (or laying down) principles without sufficient care to see that they are well-founded, that distinguishes a priori from a posteriori reasoning. This is the essence of the Scholastic method. It is never purely syllogistic or deductive; but it fails of ever being properly inductive, through resting in insufficiently established principles and using such abstract and uncritical generalizations as the premisses for constructive arguments. In opposition to this abstract procedure Bacon urges the need of advancing step by step, testing our principles by scrutinizing their application in the concrete. Only from generalizations that are carefully and methodically formed in accordance with definite rules can/

can there be such effective inference as will really indicate fact and aid discovery; and only by such methodical procedure can our generalizations, in turn, be effectively tested.

1. Cp. J.Grote, Exploratio Philosophica, i, 224.

"There are and can be", he says, "only two ways for the investigation and discovery of truth. The one leaps from the senses and particulars to the most general axioms, and from these principles and their infallible truth determines intermediate axioms. This is the way now in use. The other constructs axioms from the **senses** and particulars by ascending continuously and gradually, so as to reach the most general propositions last of all. This is the true way, but as yet untried".¹ "Both ways", he proceeds, "begin from the senses and particulars and arrive at the most general propositions; but there is a vast difference between them. The former only touches cursorily on experience and particulars, while the latter treats them in a methodical manner; the one lays down from the very beginning generalities which are abstract and useless, while the other rises step by step to universal truths".²

From this point of view, therefore, what Bacon's philosophy claims to enunciate is not so much simply the inductive method as the proper method of induction. In other words, it is in the details of inductive procedure rather than its general character that we find what is peculiarly Baconian in the method enunciated. "Bacon's method", G.H.Lewes remarks, "was not a vague formula, but a system of specific rules. He did not content himself with telling men to make observations and experiments; he told them how observations and experiments ought to be made. He did not content/

content himself with stating the proper method of investigation to be that of induction founded upon facts: he distinguished proper from improper inductions - the "interrogation" from the "anticipation" of nature".³

1. Novum Organum, Ch.i, aph.19.
2. Aph. 22. Cp. 104,125.
3. History of Philosophy, 2nd.ser., pt.i, ch.4.

But this is only one side of the truth. The inductive method is itself only part of a larger process and outlook which constitute the deeper import of Bacon's contribution to the development of philosophy.¹ His impatience of precipitate generalities and premature deductions, even his onslaught on the whole scheme of syllogism and scholastic logic, are but features in his vast design of founding a philosophy that shall be distinctively a philosophy of experience. The hasty generalizations^x obstructing full and free inquiry into the experiential sources of knowledge. This acceptance of insufficiently established conclusions underlies the appeal to tradition and authority in all its forms; and is the chief occasion of that neglect of constant reference to experience, characteristic of any system of doctrine that has come to substitute words for thoughts and thoughts for things. The habit of relying on prior conceptions to the neglect of fresh research Bacon calls the "anticipation" of nature; which is the same as disdain, or at least⁺ implied in an exhaustive method and the unbiased quest of knowledge.² A patient and thorough investigation of nature - an open minded survey of experience, - this is the design of Bacon's "new instrument". And its initial principle, accordingly, is the renunciation of all prejudices and preconceived opinions/

⁺ disregard, of experience, and is opposed to the 'interrogation' or 'interpretation' of nature implied...

opinions — idola (as Bacon calls them), ^{that is,} appearances or apparent truths, — first apprehensions which instead of being subjected to careful scrutiny are turned straightway into axiomatic principles or necessary truths, and govern all subsequent thought.

1. Cp. the continuation of the passage quoted above from Lewes: "Bacon's method may be said to have two parts: the one, that precise system of rules just spoken of; the other, that wise and preeminently scientific spirit which breathes through his works ... It is this (latter), more than his rules, which reveals to us the magnificence and profundity of his views".

2. Nov. Org., i, 26.

Bacon's disquisition on idola or 'phantasms',¹ as the great hindrances to truth, is thus a fit and natural preliminary to his account of the details of scientific method. It may be regarded as a negative or critical introduction to his own positive exposition which follows;² and it partakes, both in general and particular nature, of the characters that distinguish the constructive portions of his work. The whole discussion of phantasms is a portrayal of erroneous method, designed to show how not to proceed in order to attain truth. These appearances hindering the acquisition of knowledge are the equivalents or expressions of the precipitate conclusions which mark a ~~defective~~ ^{defective} method. In one aspect this signifies that such inadequate conclusions are incomplete inductions due to the want of definite rules for the investigation of phenomena. Bacon accordingly contrasts the method or lack of method that has served as a "bulwark and fortress" for the errors and deficiencies of the past with the principles of the procedure he is about to delineate. He animadverts upon/

upon the practice of resting in a few ill-arranged and superficially examined instances, taking these as proofs rather than indications of a general law, and estimating other instances according to their conformity with the principle thus laid down; of trusting unduly to observation to the omission of experiment, and to simple enumeration in disregard of contrary instances;

1. Nov. Org., i, 38 ff.; De Augm., v, 4. The same subject is treated in another form in Adv. of L., i, 4 and 5; De Augm., i. - The substantial identity of treatment in these and other of Bacon's works is noted by Spedding, Bacon's Philosophical Works, pp. 113-7.
2. Bacon himself says (Aph. 40): "The subject of phantasms (or anticipations) stands to the interpretation of nature as that of fallacies does to ordinary logic".

and of rendering futile such experiments as are undertaken, through random and inept labour and haste to the practical application: conjoined with the reliance on deductive arguments and the complete absence of systematic records of observations and experiments. The remedy for all which lies in cautious and graded proofs and enlightened inquiries, above all in combined and organized effort.¹ "Let man cease to wonder," he says, "if the course of knowledge is not accomplished, when they have quite strayed from the path; either quitting and deserting experience altogether or getting entangled and wandering about in it as in a labyrinth; whereas a determinate and orderly method would lead by a sure path through the woods of experience to the open ground of principle".²

But a true method of induction and the organization^{of science} are for Bacon synonymous with a scheme of genuinely experiential inquiry. The false method, which puts inadequate induction and elaborate deductive reasoning in/

in the place of exhaustive research, is a symbol of infidelity to experience and the elevation of thought above fact in the quest for truth. Regarded in ~~this~~ light Bacon's doctrine of idola is a critique of knowledge,³ which has for its purpose the removal of all that depends only on the individual or the generic nature of different thinkers, on the tyranny of language or the currency of theories.

1. Nov.Org., i, 69-70, 81-3, 98-106.

2. Aph. 82.

3. Cp. Hoffding (History of Modern Philosophy, Eng. trans., i, 197):

"Bacon's doctrine of "idols" is a piece of critical philosophy - an attempt to distinguish between that which belongs to the subjective nature of knowledge, and that which belongs to the universe".

He stigmatizes undue propensity to relate or to distinguish, to specialize or to systematize; the proneness to be ruled by ideas or by feelings, by associations and circumstances, the authority of traditions or the attractions of novelty; in general, the adverse influence that personal idiosyncracies and customary opinions exert on the advancement of knowledge. His hopes for the pursuit and attainment of truth rest in the prospect of arousing a widespread disposition to abjure assumptions and prepossessions and to learn afresh.¹ As he puts it in a concluding paragraph on the idola, "And now I have spoken of each kind of phantasm and its accompaniments: all of which must be renounced and discarded with fixed and solemn resolve, and the mind wholly freed and cleansed from them; ^x is founded in knowledge, than to the kingdom of heaven, into which one may not enter save/

^x so that there must be scarcely any other approach to the kingdom of man, which is founded...

save in the character and spirit of a child".²

The details of Bacon's formulation of scientific method are his conception of the embodiment and application of the principles that have been enunciated. As already noted, the main features of his philosophy get expression in the particular as well as in the general nature of the procedure he outlines. Thus, his conception of forms as the "laws of action" of phenomena instead of the occult essences of his philosophy. The discovery of the causal laws of nature which govern the production of phenomena is, he says, the foundation both of knowledge and practice. Since knowledge and power coincide, what alone are knowable or worth knowing in nature or experience are the concrete conditions whereby human purposes may be achieved and human progress furthered.³

1. Cp. Descartes' principle, "That in order to seek truth it is necessary once in the course of one's life to doubt as far as possible of all things". Princ. of Philosophiae, pt. i, prin. 1

2. Nov. Org., i, 68.

3. "Theoretical maxims and practical directions come to the same thing: what is most useful for practice is at the same time what is most true for knowledge". II, 4.

And his rules for the investigation and discovery of these forms or laws are likewise conceived as the appropriate means for acquiring a body of knowledge that shall be fitted to apply the facts of experience to the needs of practical life. The specifically new or differentiating features of the process as he describes it are, according to his own view, the importance it attaches to the hitherto neglected negative or contradictory instances and its provision for the extensive use of experiment. And these together form the means of making the investigation of experience both genuine and exhaustive/

exhaustive; the former providing for a critical survey in place of a mere enumeration of details, and the latter enabling the examination of phenomena under the most varied conditions.

Bacon's method, therefore, in its full significance, is the expression of an unremitting appeal to experience - and from parts or aspects of experience to its total or concrete content. That renovation of science which he contemplates, is to be effected by a return to experience and a new devotion to particular facts; its practical applicability is to be guaranteed by its being grounded firmly in a wide and varied experience and directed to the study not of formal characters but of the concrete conditions governing the production of phenomena; and the trustworthiness of its discoveries is to be secured by the linkage of its various portions and the comprehensiveness of its survey. In a word, Bacon's philosophy of science and its method owes its character to his purpose of formulating the method distinctive of a philosophy of experience.

But while Bacon is thus bent on instituting an adequate method for the interpretation of experience, his very zeal for its thoroughness and efficiency makes his method one-sided and therefore so far incomplete. For it tends to eliminate from the quest for knowledge processes without which no interpretation of experience would be possible. Bacon arraigns prejudice or prejudgment in all its forms, shows its varied nature and subtle influences, and determines the means of guarding against it. But he fails to do justice to the necessity underlying it, which gives it not truth but meaning and shows that it is the wrong use of a proper instrument. He fails to differentiate it sufficiently from the imaginative conceptions or inchoate suggestions which perform an essential function in the acquis-

acquisition of knowledge, and on which science depends not only for its beginning but at every step of its progress. He urges "attention", still attention, and ever repeated attention, to nature, to fact, to observation, to experiment;¹ but does not recognize that the counterpart of this is those very suppositions and imaginings he would abolish as alien to experiential inquiry. Not that Bacon puts no stress, in his delineation of scientific method, on the use of hypotheses or provisional conceptions. On the contrary, they occupy an important, though subordinate, place in the procedure. They are invaluable as a means of marshalling facts and suggesting experiments. Such hypothetical explanations or preparative notions Bacon recognizes in his "permission to the mind" of an "inchoate interpretation" or "first vintage" of the subject under investigation.² And these hypotheses are to be first suggested and then verified by recourse to "prerogative" instances of one kind or another which are peculiarly suited to indicate or to test them. But what Bacon does not recognize is that all science is constructed out of just such prenotions and conjectural explanations, and that these are as indispensable as observation and experiment themselves; that without them indeed we should have no inducement to observe and no clue wherewith to experiment.

1. J.Grote, in the passage previously cited.

2. Nov.Org., ii, 20.

It is indeed chiefly in his remarks on experiment that we find Bacon's genuine, if insufficient, appreciation of the ideational aspects of scientific process. He says in one passage: "Pure experience (experientia mera) - which, if it presents itself, is named chance, if it is sought, experiment/

experiment - is a mere groping like that of men who at night try all means of hitting on the right road, when it would be much better to wait for day, or to kindle a light before proceeding. But the true order of experience first kindles a light and then shows the way by means of it; beginning from experience that is arranged and assimilated, not chaotic or vague; deriving principles therefrom, and from principles thus established new experiments".¹ But what is true of experiment is true of the method of knowledge as a whole. It has ^{always} ~~all~~ the double character of suggestion and verification or idea and fact. And it is this truth that Bacon's theory of method tends to overlook or to minimize.

1. Nov.Org., i, 82. Cp. the distinction already referred to (p) between "light-bringing" and "fruit-bearing" experiments, i.e. those adapted respectively to the discovery and the application of "axioms" or general principles. Also Adv.of L., ii, ~~1~~, 1: "All true and fruitful natural philosophy hath a double scale or ladder, ascendent and descendent, ascending from experiments to the invention of causes, and descending from causes to the invention of new experiments".

The . . .

2. Nov.Org., i, 79, 80.

It is not impossible however to reconcile Bacon's statements. His assertion that the natural sciences must precede and support the others is not inconsistent with his conception that the sciences owe their unity and interdependence to their being based on common principles. Although he finds the seminal concepts of science in physics, he does not seek to dispense with a general or inclusive discipline and make one special science ^{the source} of all the rest. He distinctly maintains that the sciences form

The conception of scientific procedure which Bacon's delineation mainly suggests is that of a vast accumulation of facts, freed from all elements of theory, which shall be made to yield their own theory through an exhaustive tabulation of agreements and differences. It is a great advantage of his method, he thinks, that it tends to "level all intellects"¹ by making facts intelligible without any interpreting insight or initiative on the part of the inquirer, or indeed any activity of mind other than that of collecting and arranging the facts themselves. But even the collection of facts presupposes a rudimentary hypothesis concerning them, and therefore some conception of their nature and mode of connexion. There is, in fact, no genuine opposition between observation and experiment on the one hand and hypothesis or theory on the other. All investigation involves some element of suggestion or conjecture, which is the basal form of hypothesis: random observation and experiment are futile, and even strictly impossible. It is not as though hypothesis grew spontaneously by way of the accumulation and survey of facts; for it is hypothesis that establishes and interprets or connects the facts; and whether our apprehension of them be meagre and tentative or full and systematic, it always partakes of the nature of theory and is not a mere transcript of extraneous or indifferent data.

1. Nov. Org., i, 61, 122.

Not only, then, is hypothesis invaluable as a means of suggesting fresh lines of inquiry and directing the precise course that observations and experiments shall take; it is the starting-point of all inquiry and the very life of genuine scientific method. In the last resort indistinguishable from observation itself, it is at every step its indispensable counterpart; the whole

whole movement of scientific process consisting in the progressive formation and development of hypothesis, originally tentative and vague and passing gradually into the precision of established theory.¹

Bacon's onslaught against anticipatory conceptions and hypothetic deductions is thus misplaced in so far as it implies insufficient appreciation of the function of ideal construction in the acquisition of knowledge. Not only is the exclusion of supposition or hypothesis from our investigation of fact a misinterpretation of scientific process; there are no facts to which we can appeal in the absence of hypothesis, for fact and hypothesis or theory are intimately linked with each other.²

1. The place of hypothesis in scientific method is recognized by Mill, Logic, bk.iii, ch.11 and ch.14, §§4-7; and Jevons, Principles of Science, bk.iv, ch.23. The conceptual or ideational character of the process is shown by Whewell, Novum Organon Renovatum, bk.ii, ch.3-6.
2. Cp. Whewell: "The difficulty of distinguishing facts from inferences and from interpretations of facts is not only great, but amounts to an impossibility . . . We cannot obtain a sure basis of facts, by rejecting all inferences and judgments of our own, for such inferences and judgments form an unavoidable element in all facts". Nov. Org. Renov., bk.ii, ch.3, §2.

Conceived theory and apprehension of fact are indeed complementary features or aspects of the process of acquiring knowledge; and throughout the course of scientific inquiry they condition and alternately modify each other. Any piece of knowledge begins in a hint or suggestion as to the nature of some experience. This is, so far, alike a "supposition" and a "fact". And we may describe the process of knowledge as that of making determinate either an hypothesis or a fact. If the former, then in proportion as the hypothesis is rendered definite it indicates more precisely our conception of the fact that is

is being apprehended. If the latter, progressive apprehension or appreciation of the fact constitutes the theory as to its nature. In either case the process (which is simply the gradual fulfilment of the purpose) is the same - the characterization of some experience. If we take our experience as consisting of a variety of details requiring explanation, then the characterization of them must mean getting to see them as constituting in relation with one another some sort of connected whole or system. If, on the contrary, we take it as apprehended in some conception as to its nature, the process of knowledge must consist in testing and applying this conception by exhibiting its various implications. The former is the essence of generalization or induction, the latter of verification or deduction. And these two are only different aspects of one and the same process. The one is the search for connectives or interpretative principles, the other is the establishment of connexions already suggested. Both are needed to ensure to our knowledge at once progress and certainty; and the alternate suggestion and explication of hypothesis are the means of attaining such knowledge.¹

1. On the whole question of hypothesis and the relation between induction and deduction see Bosanquet, Logic, bk. ii, ch. 5; and cp. Venn, Empirical Logic, ch. 14-6.

Thus we see that the deductive method which Bacon condemns is simply the 'inverse' aspect of the inductive procedure he extols, and that the systematic employment of hypothesis is the very means of securing that gradual and certain acquisition of knowledge which he desiderates. The deductive and inductive phases of scientific procedure together constitute, in fact, the single instrument for interrogating nature or interpreting experience. Our questions must themselves be definite if they are to get significant answers; and experience must be made to yield its own meaning or interpretation by a progressive

-ive appreciation of what it actually is. In so far then as Bacon's method is disproportionately inductive to the neglect of complementary deductive processes, and in urging recourse to "facts" underestimates the significance of "ideas", it thereby fails of being an adequate representation of the method of experience.

B. The Deductive Aspect

The deductive aspect of scientific method predominates in the work of the next great English thinker - Hobbes. He, like Bacon, is convinced that the first and chief requisite in philosophy is method; that its errors and failures are due to the want of a determinate method which shall displace conjecture by certitude, and secure a gradual progress of knowledge instead of endless variety of opinion. Like Bacon, too, he ^x exhibiting what he conceives to be the requisite method, ¹⁶ make a preparation for its future growth. ¹ But his conception of what constitutes an adequate method differs considerably from Bacon

1. "My purpose is, as far forth as I am able, to lay open the few and first elements of philosophy in general, as so many seeds from which pure and true philosophy may hereafter spring up by little and little". De Corpore (Works ed. Molesworth, Latin vol. i; English vol. i), pt. i, ch. 1, § 1.

Science or philosophy, says Hobbes, is reasoning concerning experience. It is based on experience, but is distinguished from it as being its reasoned interpretation, or reasoned knowledge concerning it. Or, stated from the other side, knowledge original or experience differs from the knowledge that constitutes science; and the mark of scientific knowledge is evidence or certainty, implying that it is reasoned or demonstrated knowledge. Further, philosophy or science is a knowledge of conditions and consequences, of the dependence of facts upon one another. The essential character of such knowledge is that it is connected knowledge: it exhibits the connexions or consecutions of

of things or explains them according to rational principles, -the principles that govern their production. It consists in knowing concerning anything, both what it is and why it is so and not otherwise. Scientific method has thus two phases; the one consists in seeing or discovering, the other in

proving. We must begin from a concrete situation, a situation which is not yet fully understood, and which we must first see clearly. We must then discover the principles which govern its production, and finally we must prove that these principles are indeed the principles which govern its production. This is the scientific method.

experience, to seek to detect the most universal principle of things; and then to deduce from it consequences which can be used to explain the production of phenomena and to give to knowledge a demonstrative character. We have here a recognition of the place that conceptions and deductions occupy in the procedure of philosophy and science. The method implies that unless and until we have an hypothesis concerning the phenomena we are investigating, and think out the results of our hypothesis, the investigation is "uncertain conjecture" without either proof or disproof; that systematic reasoning is accordingly a prime condition of all veritable knowledge, and as indispensable to it as the observational aspect of inquiry. Yet the method, as Hobbes expounds it, is not a completely adequate view of scientific method. It leads him to despise experiment in science even while founding his doctrines on observation and experience; for his conviction of the supreme importance of principles or hypotheses, of certainty as regards their being "possible and intelligible" and not of the nature of occult qualities, and of strict accuracy in our ^x experience which is characteristic of the Baconian method. And further, his conception of the nature of hypotheses and of the process of applying them in interpretation of phenomena makes it impossible to connect the two aspects of scientific method.

Hobbes's delineation of method does not, indeed, suggest that the deductive procedure enables us to dispense in any wise with precise and constant reference to experience. On the contrary, both at the outset of our investigation, in framing our hypothesis, and when we come to apply it to the phenomena belonging to any particular sphere of experience or portion of such sphere, we must proceed by way of observation and discovery. Moreover, the hypothesis is to be taken only as suggesting an explanation, until the facts can

can be seen to be conformable to it, and it is subject to being superseded by any other hypothesis with which the facts seem to have more accord. The main thing is that whatever explanation is given must be by means of some hypothesis or another; and that, so long as we are using a certain hypothesis we must make no supposition as to the nature or production of the phenomena under investigation, that is inconsistent with the implications and consequences of the hypothesis itself. But Hobbes gives a quite inadequate account of the character and working of the principles or hypotheses that are to be applied in explanation of the details of experience. His view is that these conceptions or explanatory principles are of the nature of definitions, and that all reasoning is only the unfolding of the implications of definitions.¹

1. De Corpore, i, 6, §§12-7.

Now it is true that all conceptions can be looked upon as definitions; but it is not true that they are only definitions, or that reasoning consists in the explication of concepts in the sense of logical contents that can be manipulated after the manner of symbols or counters. But this is what Hobbes's view implies. He regards concepts as definitions, and definitions as arbitrary contents which can be combined and worked out into their implications and consequences without being modified by contact with the detail to which these are to be applied.

It is characteristic of Hobbes's method that the conceptions which operate as explanatory principles ^{of phenomena as exemplified} in the definitions and axioms of mathematics, and that mathematical procedure is taken as the type of the universal method of science. He holds the view that mathematical truths are deductions solely from

from definitions; and he extends this conception to the other sciences as well. But this view of mathematics is both erroneous in itself and incapable of direct transference to other sciences. For the reasoning in mathematics requires not only the definitions but also the postulates. From the definitions alone, without the postulates, no system of theorems or propositions is deducible. It is only inasmuch as the definitions contain or imply certain assumptions that inferences are obtainable at all; and it is on these rather than on the definitions that the reasoning is primarily based. These assumptions or presuppositions are, in geometry, the reality of space or extension, and in arithmetic, of time or number, as at least partial expressions or specific modes of our experience. The proof of any mathematical proposition requires, along with the definitions, the postulates expressive of the experiential (that is, perceptual as well as conceptual) character of the basis underlying the whole system of truths. In geometry, this is distinctly shown in the constructions. It is because we are able to envisage the spatial relations involved and to demonstrate them by means of actual or ideal construction in accordance with our basis, that the conclusions are inferrible and demonstrable as universal and necessary truths. In the sciences of number the reference to reality or experience is less obvious but is none the less present. As in geometrical science it is the correlative discreteness and continuity of space, as an authentic reality or truth of our experience, that enables the construction and therefore the proof of spatial relations; so in the arithmetical sciences the discovery and proof of numerical relations depends on the corresponding nature of time, and not on arbitrary definitions. And even in algebra, where the use of symbols seems to make the reference disappear, it is not simply in virtue of the signs or mental counters but of their being signs

which

which are or may be representative of things, that conclusions are obtainable by their means.^{2.}

1. This applies equally to the geometry of non-euclidean space, which requires constructions that are (on any view) not incompatible with the nature of our spatial experience.
2. The nature of mathematical certainty is discussed by Mill, Logic, bk.ii, ch.5 and 6.

Thus ~~the~~^{er} hypothesis or principles of mathematics are not, as Hobbes's view of them implies, arbitrary concepts independent of actual reference to experience. Now is mathematical procedure solely conceptual or deductive. They work on the supposition^x tract and hypothetic. A fortiori, this conception of method is inadequate when applied to the other sciences. In mathematics, the abstract or limited nature of the subject-matter gives peculiar countenance to the view that the reasoning consists in the explication of concepts and to the indisputable certainty of the principles and their application. But, as we have seen, definitions or concepts are insufficient apart from constructions working in conformity with the nature of a presupposed basis. And what is true of the mathematical sciences is similarly true in regard to knowledge generally, with whatever special aspect of experience it is concerned. From definitions alone, or from conceptions taken as arbitrarily completed contents that are not subject to ulterior conditions, no transition is possible to the concreteness and variety of phenomena. The reasoning requires a constant reference beyond the definitions to the nature of some sphere of reality or another; and it is through the interplay of conception and actualization that the interpretation of experience advances. Without a medium or material of one sort or another, with reference to which the conceptions get their

their content, and in view of which these contents are liable to modification as well as capable of application, no development of knowledge is attainable. Still more does this become apparent when we endeavour to pass from one sphere of experience to another. For we are then not only limited by the condition implied in the postulate or presupposition defining one plane or order of facts but by the relations between the presuppositions peculiar to different planes. To this task the abstract conceptual method is totally inadequate. It either fails altogether to effect the passage or does so only by neglecting the distinctions between the various spheres. The concept of motion, which is the hypothesis Hobbes employs, is simply transferred by him without modification to one aspect of experience after another, and the differences of the phenomena are sacrificed to their partial unity. Instead of this what we require is a conception of method such as shall provide against undue rigidity of our hypotheses or interpretatory principles; which implies as we saw before, the free interplay of idea and fact or of form and material of explanation.

While, therefore, Hobbes's method implies that deduction has a place no less important than induction in scientific procedure, and thus serves to correct the deficiency of the Baconian conception, it is itself chargeable with a corresponding inadequacy. Hobbes too fails to recognize that truth is ascertained only by the alternate reaction of "principles" on "facts" and "facts" on "principles"; that the certainty of principles as well as the explanation of facts can be established only by proceeding gradually as supposition and application throw light on each other; or, that the verification which scientific knowledge implies, involves the progressive modification and mutual adjustment of the hypothesis used to interpret the facts and our conception of the facts that are being interpreted.

Hobbes

Hobbes speaks of the observational and the ratiocinative aspects of the process as two entirely separate portions of scientific procedure, and even as two quite distinct methods. The rudimental principles of things, as manifested in concrete circumstances, may be known, he says, "not only by ratiocination but also by experience". And he speaks as though, after our first principle is formulated and the fundamental inferences drawn from it, the analytic and synthetic, or inductive and deductive processes were alternative and separate methods, instead of being different portions or aspects of the same process and of the one method of science.¹ The source of error here lies in viewing hypothesis as definitions, and definitions as arbitrary and rigid conceptual contents, from which consequences are derived by abstract or formal reasoning.

1. De Corpore, i, 6, § 7; iv, 25, § 1 and 30, § 15.

But further, notwithstanding the difference between Hobbes's conception and Bacon's there is a fundamental identity of principle between the work of the two philosophers. Hobbes's aim, as well as Bacon's, is to lay down the principles of a thorough unification of knowledge; and the difference of their methods is an expression of the different means they consider requisite for enabling such unification. What Bacon thinks to secure by a gradual progress from the less to the more general through intermediate conceptions, and so by a careful and methodical employment of the inductive process, Hobbes regards as requiring above all a thorough going deductive argument from the most universal principle ascertainable. These

These are in fact, as has already been shown, complementary conceptions; and the whole difference lies in the stress that is put on the one side or the other. The same desire for unity of process in the sciences and effective linkage of their principles, leads Bacon to urge the need of making sure of the intermediary notions or connecting links, and Hobbes to emphasize the orderly and inflexible application of the fundamental principle. Hobbes finds the most universal principle of things in the idea of motion; and his mode of connecting the sciences, accordingly, is the systematic development of the consequences of this hypothesis. By making this one idea the basis of his philosophy and applying it consistently in explanation of the phenomena in the successive spheres of experience - the physical, the psychical, and the social, - Hobbes seeks to accomplish that correlation of the parts of experience essential to its understanding as a concrete whole, which is the design of Bacon's classification and interconnexion of the sciences. The procedure he employs, while illustrating on a large scale the use of hypothesis and being indeed itself of the nature of a huge experiment, has the defect that Bacon ascribes to all entertaining of prenotions - that if the principle be itself an abstraction from the concreteness of experience it cannot prove adequate to the interpretation of the whole. The rigidity and abstractness of Hobbes's method, as shewn in his view that reasoning consists simply in the explication of definitions or fixed concepts, and his complete disjunction of the ratiocinative and observational processes, allow no means of modification of the hypothesis as it encounters the characteristic differences of the various parts or aspects

aspects of experience. But none the less his deductive method has quite the same aim as the inductive method of Bacon - the unification of knowledge by the employment of a common method over the entire realm of experience.

Chapter IV

THE VIEWPOINTS OF PSYCHOLOGY AND EPISTEMOLOGY

A. Their Indifferentiation

We have seen in the foregoing chapter that for Hobbes as much as for Bacon philosophy and science are essentially one. In the usage of both thinkers the terms themselves are virtually interchangeable, the groundwork of knowledge being distinguished from the total edifice simply as primary philosophy or as the most fundamental portion of science. But Hobbes has a profounder conception than Bacon of the fundamental inquiry, and there appears in his work the formulation and approach of a distinctively philosophic problem, although it remained for later thinkers to treat it with any degree of fulness. Underlying his hypothesis that all phenomena are forms of motion and his consistent application of this hypothesis to phenomena of the most different kinds, there is contained in Hobbes's philosophy an initial and quite indispensable inquiry concerning the ultimate constitution of experience. This forms the basis of his whole system and imparts to it that character of depth, which combines with its scope to give it the nature both of philosophy and science.¹

Scientific or systematic knowledge, we found, is defined by Hobbes as the knowledge of the conditions and connexions of the phenomena which constitute our experience. Experience is distinguished from science only as being the original from which science is derivative, or the material which in science is wrought into system. The material

¹Cp. C. Croom Robertson's Hobbes, pp. 77-81.

of experience consists of just such phenomena or appearances as science has to exhibit in their relations to one another. The fundamental fact of experience, then, - the most fundamental of all phenomena, - is appearance itself;¹ that is, the fact of the appearing of these appearances. Accordingly, the fundamental problem of philosophy concerns the constitution and origin of appearances as such. Hobbes finds that the phenomena of experience are presented in the twofold character of sense and the observation or notice of sense. Without both of these knowledge would be impossible. Sense is the basis of knowledge; and the notice of it necessary to actual knowledge is rendered possible by that lingering² of sense which we call memory. "We take notice of sense", he says, "by sense itself - namely, by the remembrance of it as it passes away, which is the perception of one's own perception."³ But he further finds that every such appearance or 'act of sense', as it arises, lingers, and disappears, is a change or movement of consciousness - a mode of motion, conditioned by a corresponding motion of action and reaction in the body or organism.⁴ From this point Hobbes advances to his theory that the nature and conditioning of all the 'perpetual variety of phenomena' consists in motion. This is the first principle of his philosophy; and his whole system of doctrine is a development of this hypothesis on the lines of the method which he conceives to be the means of securing certainty of results and continuity of explanation. The detailed application of his hypothesis or

¹ 'ipsum *τὸ φαίνεσθαι*' in the original Latin version (De Corpore, iv, 25, §1).

² The expression is not actually used by Hobbes, but it represents his meaning. It corresponds to his definition of imagination (which is memory otherwise considered) as 'decaying sense' (§7).

³ 'sentire se sensisse' - one might almost render by 'sense-reflexion' or 'reflexion of sense'.

⁴ §2.

the separate investigation, in the light of it, of phenomena of different sorts or spheres constitutes the particular sciences; an exposition of the implications of the principle itself and its relation to the common notions involved in all investigation is general philosophy; and the construction of a solid fabric of knowledge on the basis thus laid for it, as a connected interpretation of experience, would be at once and indifferently a system of philosophy and an encyclopedia of science. Such is the task Hobbes sets himself. But the significance of the undertaking is lost unless we realize that it is his conception of the nature and genesis of phenomena, as the universal form or mode of our experience, that gives him the principle which he proceeds to apply in explanation of all their detail and variety; and that it is the presence in his philosophy of this initial inquiry, however meagrely formulated and inadequately dealt with, that makes it a connected body of doctrine and not an arbitrary transference of the principles of one special field of inquiry to other and quite different orders of fact. Hobbes's method is, as we have already learned, inadequate to the work required of it. But both the conception and the performance of his undertaking imply - what we found Bacon likewise assert - that unity of knowledge cannot possibly be attained at the expense of fundamentality.

Hobbes's philosophy thus contains a distinct recognition of the truth that, as the foundation of all investigation of phenomena, and the common basis therefore of the several sciences, there is requisite a precedent inquiry concerning the nature of phenomena, as such, - that is, considered as not only forming the material but constituting the

very nature of knowledge. Hobbes is in this the direct forerunner of Locke, the first implication of whose philosophy is that the groundwork of the sciences must consist in an examination of the mind or understanding itself, as the instrument or means of knowledge; that the mind's 'notice of itself', as he puts it, is a precondition of its proper and successful 'search of other things'. But there is an important difference between Locke's mode of viewing and conducting the fundamental inquiry concerning phenomena and Hobbes's treatment of the question, - one that signifies the express differentiation of philosophy from science, or at least the definite conception of a special investigation distinguishable as the philosophy or science of mind. Hobbes does not clearly differentiate the investigation of phenomena as facts of consciousness or items of knowledge from that of their physical and physiological conditions. Locke on the contrary expressly sets aside, as not belonging to his purpose, the question of the dependence of mental facts on material or organic facts, and undertakes instead the investigation of the ideas themselves. His problem is, like Hobbes's, that of the nature and origin of ideas. But the conception he forms of this problem excludes consideration of their physical conditions or accompaniments, and comprises only, as the distinctive feature of his own inquiry, the question concerning their interconditioning and interrelations among themselves. Locke's investigation of ideas means the inquiry - how they presuppose and condition one another, how from them knowledge arises, and what is the consequent nature of the knowledge thus arising.¹

¹Essay conc. Human Understanding, i, 1, §3.

The account Locke gives of his project in the introductory chapter of his Essay implies that philosophy proper, as the foundation of the sciences, is essentially a method. What he desiderates is a means of attaining certainty in knowledge, so far as this may be attainable. For this end the prime requisite is to know the nature of knowledge and what distinguishes certain from uncertain knowledge, or knowledge proper from mere belief or opinion. Only thus can disputes be avoided in questions that admit of being certainly answered- by attaining certainty and recognizing it as such; and also in questions not admitting of certain answers- by recognizing their inevitable uncertainty. The means or method Locke proposes for securing such certainty as is attainable in the sciences, and preventing our 'demanding certainty where probability only is to be had', consists in a preparative examination of knowledge with a view to ascertaining its preconditions and accordant scope. His philosophical propaedeutic to the sciences, then, is a critical inquiry into the origin, the evidences, and the limits of human knowledge, as the only means alike of setting aright the problems it is called upon to solve and of understanding the precise significance and value of whatever answers to them may be forthcoming.

This conception of a critical study of knowledge, as forming the proper groundwork of the sciences, is presented more definitely by Hume.¹ He too seeks some criterion of certainty or evidence which shall obviate endless controversies and establish a solid body of

¹Berkeley's philosophy adds nothing in principle to the method of Locke, though it does much in the way of bringing out the implications of Locke's criticism of knowledge.

knowledge. "Principles taken upon trust, consequences lamely deduced from them, want of coherence in the parts, and of evidence in the whole. - these, he says, characterize each system of philosophy. And the imperfect condition of the sciences, of which this instability of system is the counterpart, is such that, not only is there no certainty with regard to any question but the disputants do not even know whether they have grounds for certainty or not. The disputable nature thus manifest in metaphysical reasonings, as commonly conducted, has occasioned a mistrust of metaphysics itself. It seems that where there is so much uncertainty and futile argument all hope of reaching truth must be vain. The only remedy against aversion to metaphysical researches is, Hume holds, the understanding of their real nature and the determination, at whatever cost, to probe the questions to the utmost of our ability and recognize frankly the point where our own explanations become lost in obscurity. The inevitable abstruseness and difficulty of the subject, as they cannot reasonably deter us from the enterprise, so they afford no proof that it is either needless or impracticable. On the contrary, every subject of human interest or inquiry has in it some element or aspect that relates it to, and makes it dependent on, a study of fundamental principles. The chief source of the uncertainty and obscurity attaching to philosophic researches is the want of a proper conception of the nature and scope of the inquiry. And the one means of replacing conjecture and disputation by a measure of certainty and solidity, and of bringing light out of obscurity, consists in accuracy of research and reflexion, joined with a due

sense alike of the importance and the limitations of the results which this careful scrutiny and just reasoning yield.¹

Hume's aim therefore, as he sufficiently indicates, is to transform metaphysics from a series of futile speculations into a science. This requires, first, that we understand wherein the science consists; and secondly, that we adopt the right method of dealing with the subject. Metaphysics, or philosophy proper, signifies according to common usage that portion or aspect of science in general which concerns the fundamental principles underlying the various particular sciences. All science, whether theoretical or practical, has its basis and profounder aspects in an inquiry that is more strictly metaphysical or philosophical in character. Hume finds the essentially philosophic inquiry, which is the foundation of all the other sciences, in the science of mind. More distinctly and more fully than Locke he shows how the various sciences depend for their stability and progress on an adequate comprehension of the nature and process of knowledge as the instrument of all investigation. "'Tis impossible", he says, "to tell what changes and improvements we might make in the sciences were we thoroughly acquainted with the extent and force of human understanding, and could explain the nature of the ideas we employ, and of the operations we perform in our reasonings." In undertaking to explain the principles of knowledge, "we in effect propose a complete system of the sciences, built on a foundation almost entirely new, and the

¹Treatise on Human Nature, introd. : Enquiry conc. Human Understanding, sect. i.

only one upon which they can stand with any security."¹

The peculiar advantage of basing the sciences on an inquiry into the nature of human understanding Hume finds in the susceptibility of the subject to proof or certitude, which implies that it is conformable to the method of observation and experience. Hume proposes in fact to make metaphysics a science and the basis of the other sciences by applying the experiential method- which is admitted to be the only adequate one for the investigation of nature- to the phenomena of mind. "As the science of man", he says, "is the only solid foundation for the other sciences, so the only solid foundation we can give to this science itself must be laid on experience and observation."² Thus the conception of philosophy presented by Locke and Hume is in the first instance an elaboration of the principle underlying Hobbes' work, "that mind can be investigated by the same method and under like conditions as nature."³ But it is also a development of his conception that the initial problem of knowledge is an investigation of the structure or constitution of knowledge itself. Their differentiation of it from the special sciences, for which it is a pro-paedeutic or precedent discipline, signifies that the most fundamental of all inquiries is one concerning the nature of the human understanding, or of knowledge as the instrument or rather the generic character of the sciences. And the conception they have of this basal inquiry and its method signifies that it is the community of method existing between it and the sciences in general, that enables it to form

¹Treatise (ed. Selby-Bigge), pp. xix, xx; (ed. Green and Grosse), p.

²Treatise (S.-B.), p. xx; (G. and G.), p.

³Croom Robertson's Hobbes, p. 124.

the foundation for them and to give any degree of stability to their results. In other words, philosophy and science can only be one in so far as the former becomes an inquiry that is truly scientific, and the latter recognizes its dependence for intelligent working and serviceable conclusions on an elucidation of the character of the knowledge which it conveys. The result to which Locke inclines and which Hume definitely asserts is that the only certainty attainable is one which meets the needs of practical life but fails of theoretic justification. But their aim is none the less to secure to the sciences and their conclusions the evidence and the applicability that can come - either in the case of a single science or of all of them together - only through discerning a community of principle underlying all their diversities of content and procedure, and determining the connexions and interdependencies of each with each. And their means for achieving this end is to institute a preliminary inquiry into the operations of the understanding itself, that is, of knowledge as the medium of all investigation and all evidence.

But we must now look more closely at this conception of a study of knowledge as the distinctive problem of philosophy proper. Both Locke and Hume recognize that the investigation of the physical and physiological conditions under which ideas occur in consciousness belongs to natural rather than to mental science. As we have seen, their inquiry concerns the ideas themselves - the resolution of their complexity and variety into simple constitutive elements or factors, the discovery of the laws of their interconnexion, and the examination of their scope and evidences as vehicles of knowledge. But they do not differentiate two modes of viewing ideas - one of which has to do with

their origin and development as processes occurring within the limits of a particular course of consciousness or individual mind, while the other deals with their character and constitution as the source and content of knowledge itself. All through the philosophy of Locke, Berkeley, and Hume there runs a confusion between these two inquiries - the psychological and the epistemological. The distinction between the two disciplines need not imply that it is possible to consider ideas apart from their function of conveying knowledge, and then as a different or further account of them to consider their referential character. As we shall see presently, the attempt to separate the subjective existence from the objective reference of knowledge is futile, because it never exists without an objective as well as a subjective aspect, and its reference (which is likewise both subjective and objective) is an inalienable feature of its nature as an occurrence in consciousness. But it does imply that the question of the nature and content of knowledge must precede that of its conditioning and origin, must determine its significance and limitations, and must not be allowed to be prejudiced by assumptions that are incidental only to it and not to the fundamental inquiry itself.

Now it is just insufficient distinction of the two ways of regarding ideas - as processes occurring in an individual consciousness and as the contents of knowledge - that occasions the view of the nature and validity of knowledge presented in the Lockian development. For the influence of presuppositions which are a legacy from discussions about the origin of ideas, undertaken without prior and unfettered investigation of their precise content, leads to the gradual

obliteration from them of all intrinsic referential character and ultimately to denial of their validity altogether, or at least of any adequate justification for the practical assumption of it. Much of the work of Locke and his followers consists in showing the implications of the epistemological as distinguished from the psychological attitude towards the contents of consciousness; but their dominant view of ideas and the conclusions to which it leads them, are due to the failure to avoid preconceptions that come from considerations of origin rather than content. More especially, in spite of the very distinct progress towards an untrammelled inquiry into the content of experience, as the theory of knowledge proceeds from Locke through Berkeley to Hume, there remains throughout the same conception that ideas are by nature discontinuous and mutually independent existences. And this assumption, with its consequent outcome, is bequeathed to the critical philosophy by previous hypotheses as to the genesis of ideas in individual minds standing over against the things they are to know.¹ But we have to note further, that this mode of conceiving the nature of ideas and the import of knowledge involves an inadequate apprehension both of the constitution of experience and of the significance of the experiential method. In consequence of it the fundamental thesis laid down by Locke and developed by his successors, that all knowledge is from experience, is deprived of its full meaning, and thus prevented from achieving the results that accrue from a wider standpoint and a truer method. Instead of interpreting experience in the widest sense, they narrow it down so that its contents become inexplicable

¹This point is worked out in the papers on the General Development.

occurrences which are at once our only source of knowledge and a mutilated fragment of what it purports to comprise and convey. Hence the supposition that the inevitable limitation of knowledge to experience implies a curtailment of its scope and is disparaging to its validity. A more fundamental method and a correspondingly wider view of experience are required in order to repair the breach between knowledge and practice and between experience and reality. How this is to be done will become evident as we proceed. The way to the adoption of a profounder standpoint lies through the philosophy of Reid and Hamilton.

B. The Differentiation of Psychology and Epistemology

English philosophy enters upon a further stage of its development in the opposition offered to the principles of Locke and Hume by Reid and his followers in what has come to be known as the Scottish school. Reid does not regard his method as differing fundamentally from that of his predecessors. He considers his philosophy a more thorough application of the experiential method inaugurated by Bacon and characteristic of English thought from the outset. This method, he says, "is the only one by which any real discovery in philosophy can be made."¹ So far as regards the fundamental principles of their procedure his predecessors have been right. "They have put us in the right road -that of experience and accurate reflexion."² But he sees that their procedure is warped by presuppositions about the nature of ideas and their place in the economy of knowledge. In particular, the supposition that ideas can be of such a nature that they come between the mind and reality and actually prevent certainty as to their own adequacy to reach any existence beyond themselves, is, he declares, one that is wholly mischievous and erroneous. Reid insists that if we take our experience as it proclaims itself to be and do not disguise it by unnatural assumptions about it, we shall find that, however limited our knowledge is in respect of its range and excellence, it is thoroughly reliable and carries with it the assurance of a genuine existential reference. The proof of this lies in the truth that ideas, re-

¹ Works (ed. Hamilton), i., 97.

² P. 101.

garded as mere occurrences in consciousness which may or may not have ulterior significance and validity, are an abstraction from the actual nature of our experience. Not ideas, merely as psychic processes having no inherent referential character, but judgments of existence or acts of existential reference are the concrete material of consciousness. Reid's contention, that our experience has always an objective along with its subjective significance, thus constitutes a step towards a fuller and more adequate method of interpretation. But by seeking the principles of judgment not in the nature of ideas themselves, but in a supposed 'constitution' of the mind distinct from them, he thwarts his own purpose of being true to experience. He does not dispute but rather, as we have seen, upholds the assertion that knowledge is based on experience. But his own procedure, though it does not amount to rejection of the principle of experience, signifies that knowledge originates only in virtue of what is superadded to experience rather than what experience itself is or contains.¹

Reid's doctrine thus involves at its very core a modification in the conception of philosophic method. For the desiderated correction of the inadequacies in the previous account of knowledge is sought

¹This is, of course, essentially the same form of doctrine as is involved in the principle which Kant likewise opposes to the philosophy of Locke and Hume:— "Although all our knowledge begins with experience, it by no means follows that it all originates from experience." Kritik der reinen Vernunft, introd., §1.— For the relation between Kant's and Reid's doctrines cp. Prof. Pringle-Pattison's Scottish Philosophy, esp. ch. iv.

not only in a sounder hypothesis concerning the nature of experience, but also in change of procedure signifying that experience has to be investigated in another way or with a different view of the problem implied. In other words, Reid virtually shows that the failure of Locke and his successors to establish the objectivity of knowledge is due to their adopting an inadequate viewpoint and method in their investigation of experience. In so far as his own view implies that the objectivity of knowledge can be vindicated otherwise than by means of a more thorough investigation of ideas, as the sole contents of experience, it is open to the objection that experience cannot be supplemented from any quarter that is not likewise experience; and that, accordingly, any decided advance in method and doctrine can be achieved only by taking experience and its contents in the widest way and at their deepest level. But the underlying implication of his theory is that there are two points of view from which we may deal with ideas as items of knowledge; and that it is by taking the more fundamental viewpoint that we get the required proof of their objectivity. The methodological significance of Reid's opposition to the principles of his predecessors is, however, brought out more fully in Hamilton's treatment of the subject.

Hamilton asserts explicitly that there are two diverse methods of investigating experience. According to his manner of conceiving the distinction between them, the one method is observational and concerns the facts of experience, the other is critical and concerns the implicates of experience. In the failure to distinguish these two

inquiries Hamilton finds the source of the inadequacy of the preceding theory of knowledge. The critical as distinguished from the observational inquiry concerning experience consists, he says, in ascertaining what are the veritable declarations or deliverances of our consciousness and in redarguing any attempt to discredit their trustworthiness. These ultimate truths of consciousness are the criteria for any statement as to the nature and validity of our knowledge. In these principles of consciousness, as distinguished from our ideas in their factual existence as items of experience, is found the implication of existence beyond the ideas themselves. On Hamilton's view, then, so long as we confine our attention to the facts of experience as occurrences in consciousness there is no verification of any existence beyond them. But distinct from their factual occurrence there is their existential import, and this, although it cannot be directly vindicated, is capable of indirect vindication. The facts of consciousness are ostensibly references to existence, and although the validity of their reference is not self-evident, as their occurrence is, we are warranted in assuming its truth until it is shown to be invalid. The falsity of the apparent reference to existence could be established only by proving that it contradicts some other fundamental implication of our experience. And since no such proof is forthcoming, the presumption in favour of its truth is established and its validity therefore sufficiently vindicated.¹

¹Lectures on Metaphysics, i, 271 ff; Dissertations (Reid's Works, vol. ii), pp. 743-6.

But while Hamilton thus maintains that an adequate inquiry concerning experience discloses the truth, that it contains or at least implies a reference of ideas to existence beyond their own factual occurrence, his own mode of inquiry does not make a sufficient advance on that of his predecessors. For the result of his distinction between 'facts' and 'truths' of consciousness is that he conceives implicates of experience as extraneous to its own proper content. The implications of experience are, in fact, treated as the conditions by means of which it arises. The existents which the inquiry discloses are regarded as conditions of experience in the sense of being its originating factors, and therefore as characterizing existence prior to it. The real import of the critical inquiry is thus lost by its being taken as signifying that the existence to which knowledge refers is an occasion or precondition of the occurrence of the facts of consciousness as the vehicles of the knowledge, while the truths or principles of consciousness are correspondently taken as preconditions of experience belonging to the constitution of the mind. Hamilton thus virtually makes his conception of philosophic method turn on a complete severance in principle between the occurrence of mental facts and their validity or existential reference, instead of making it depend on a distinction between an inquiry that concerns the existential conditions of the facts of consciousness and one that does not. Before passing on to Ferrier's statement of this distinction, we must notice the attempt made by Mill to attain unity of method and principle by a return to tenets on the lines of the philosophy of Berkeley and Hume.

In Mill's examination of Hamilton's doctrines the conception of a distinction between the facts and the truths of consciousness- or (what is the same thing) the assertion of principles that do not intrinsically belong to experience but require to be superadded to it- is controverted. Mill urges that the only genuine inquiry is as to what the facts of consciousness are. The interpretation of experience consists in ascertaining precisely what it is that consciousness testifies, not in seeking to discover a warrant for its assurances in principles that are extraneous to its material or content. If the existential reference of ideas is to be vindicated at all, it must be found in ideas themselves or shown to be generated by their operation in experience.¹

Mill's view of the philosophic problem is thus substantially identical with Hume's. Like Hume he insists on making the material of experience the sole source and criterion of conceptions concerning its nature or import. If all knowledge is based on experience, it is futile to distinguish the facts of consciousness from the principles which give significance to these facts or to seek for the conditions of experience in anything outside itself. The question for philosophy, therefore, again resolves itself into the inquiry, what experience is or contains. This is the only legitimate meaning of an interpretation of experience. What experience implies- if it implies anything beyond itself- must be a feature that arises out of it, not one that

¹Examination of Hamilton's Philosophy (6th ed.), p.

is imported into it. Unless we can exhibit any alleged principle of explanation as capable of being generated in the course of experience from the specific items of consciousness which are recognized and indubitable content, the principle must be rejected in favour of one that is so generable.

But while Mill's procedure (like Hume's), by renouncing the search for the conditions of experience in assumed existence mental or material external to it, is in the direction of an adequate experiential method in philosophy, he conceives this method in a way that precludes his inquiry from being a full and unfettered investigation of experience. The mode of procedure he follows is expressly designated the 'psychological' method, and this is the only alternative he has to offer to the 'intuitional' method which he criticizes. The psychological method, as Mill uses it, consists in resolving consciousness into its ultimate and original elements, and exhibiting knowledge as arising from the combination of these primary data. The one criterion for any alleged article of knowledge is its resolvability into such primary elements without residuum or extraneous item, and the one function for the connexion of ideas and the acquisition of knowledge is the natural associability of the ideas themselves. These original elements constitute the only genuinely intuitional factor of our consciousness; and no supposed intuition with another nature and source can be accepted unless it cannot be exhibited as possibly generated

by the association of ideas and due to their difficulty of dissociation . But Mill's assumption of the ultimate discreteness of ideas prevents him from providing an intelligible means of their connexion. He explains the relations, which ideas acquire, as references to other actual or possible ideas connected with them by association. But the association of inherently disconnected items of consciousness is quite inexplicable, and even if explicable its principle of connexion would after all lie outside the ideas connected. In short, since Mill rejects any principle of explanation extraneous to ideas, his doctrine of association is the only form of explanation that is available; and since the association has no basis of continuity or intrinsic relation to work upon, he is unable to provide an adequate means of the interconnexion of ideas or a sufficient explanation of their existential reference, and fails therefore to give an adequate account of knowledge. His main contention is a valid one- that knowledge must be explained by showing its essential uniformity of origin and process, and not taken as requiring any principles other than those native to the character and functioning of ideas as such. But his own procedure is at variance with the requirements of a genuine philosophy of experience. For, though he begins with an analysis of concrete experience, he assumes that the elements or components which the inquiry discloses constitute the actual and original nature of conscious-

ness, and that the problem of knowledge concerns the development of this simple material into a complex one. But to this it must be objected, that neither does experience consist of abstract elements nor, if it did, could they forthwith be treated as materials from which knowledge originates. Whatever the originating conditions of consciousness are, they are not identifiable with the constituents disclosed by analysis of its concrete content.

Although Mill's method, then, is avowedly experiential, it fails of being truly philosophic. He rightly enough refuses to consider experience as requiring for its explanation any principle extraneous to it, - any existential conditions prior to its occurrence in or as specific modes of consciousness, or any factors of consciousness with another nature and source than experience itself. But his inquiry nevertheless concerns the origin of knowledge and the conditions accounting for its origin, that is, its genesis and development viewed as an occurrence in the individual mind. These conditions are transferred within experience; yet they are still originative principles. But the question of originating conditions is just the feature that characterizes the psychological as distinguished from the philosophical viewpoint, the psychological point of view being precisely that in which existential conditions outside the ideas are required in order to account for their origin. The psychological method does not, as Hamilton supposes, require to be corrected or supplemented by a me-

thod that shall disclose intuitive principles underlying knowledge; nor does the distinction between psychology and philosophy consist in the former's regarding ideas apart from their existential references while the latter vindicates these references. But the two inquiries are distinguished in a way towards which Hamilton's distinction points. The psychological inquiry is one that considers ideas as having conditions in existence beyond themselves,- the origin of knowledge as an occurrence in an individual mind being inexplicable without such reference. The philosophical problem, on the contrary, concerns the nature of knowledge or experience as a more fundamental question than that of its origin, to which, indeed, it alone can give rise and it alone give significance. Thus in the philosophy of Locke and Hume psychology and epistemology are either confused or blended. In Reid's and Hamilton's doctrines they are on the way of being separated, but the problems are not properly interpreted. Mill's view suggests a fundamental unity underlying the two methods, but without appreciation of the difference between them. His work as a whole¹ is governed by his explicit adoption of the psychological method as the method of philosophy. It is Ferrier who first clearly distinguishes the two viewpoints by differentiating his metaphysical inquiry from the 'science of the human mind'.

¹Mill's logical writings contain suggestions of a more adequate method, but he does not work it out or remould his philosophy in accordance with it.

The main principle of Ferrier's philosophic method is that the problem of knowledge is prior to and presupposed by that of being or existence. That questions about existence should be prefaced by some sort of inquiry concerning knowledge is indeed an implication of the experiential method from its formulation by Locke or even from Bacon's critical investigation of 'idola'. But the conception of an examination of knowledge, as introductory or propædeutic to the work of the sciences, is now transformed into the doctrine that the nature of being can be interpreted only through or by means of an interpretation of knowledge. In Ferrier's philosophy the start from experience and with a critical study of knowledge becomes an explicit approach of being from the nature of the knowledge of being.

Even when in the systems of previous thinkers the question of knowledge is taken as in any way anterior to that of existence, the inquiry is never kept free from consideration of what is or is not requisite in existence to account for knowledge. Ferrier shows the incompetence of such procedure. When we ask what exists, we inevitably find ourselves trying to state in answer what is known as existing—what we know to exist. What is or exists, is ascertainable only in the character of what is known. This or that exists, therefore, always implies this or that is known as existing. Accordingly, before we attempt to answer (or even to ask) any other questions about existence, we must understand what is implied in anything's being known to exist.

This can be understood only in answer to the question, what 'known' means or involves; or, in other words, what knowledge is. Only after we have characterized knowledge can we proceed to treat of existence.¹

Ferrier finds the essential character of knowledge in its always containing two distinguishable though inseparable features- a knowing and a known. This is the character or constitution of all knowledge as such. That it involves these two factors is the primary condition or implication of knowledge. But they are elements in the act of knowledge itself, not existential conditions of its occurrence. The inquiry into the nature^{of knowledge} discloses only what is contained in knowledge, not anything contained in existence outside it. Ferrier insists accordingly, that the implicates of knowledge, which it is the task of the theory of knowledge to discover, must not be taken as signifying existents that condition its origin. They are the expression of its nature, and signify primarily only the constituents without which knowledge would not have the character it has. The significance which the theory of knowledge has for the characterization of being must therefore be of another sort than consists in transforming its implicates into conditions accounting for its origin. What this significance is, is the next point to be determined.

Having shown the nature or fundamental principle of knowledge Ferrier proceeds to apply it in order to show its reference to existence. It has in the first place a negative import. It implies that

¹Institutes of Metaphysic, introd., esp. §§ 54-60.

nothing that is known- for example, mind and matter, or self and things- can be known as independent of knowledge,¹ or again, as independent of each other. For they are knowable only as correlative (or, in general, related) existences; and in the precise mode in which they are known, they are features or items within knowledge. When, therefore, we regard the objects of knowledge as independent existents, we are abstracting them from the concrete unity of knowledge and viewing them otherwise than as they are for it. But there is a positive as well as this negative significance. Not only is it impossible that anything should be known that contradicts the primary principle of knowledge; and impossible, therefore, that things should be known either in isolation from each other or as existing quite independently of knowledge. It further follows that if existence is known as it really is- if knowledge is real, and what is known in knowledge is real existence - then what is essentially constitutive of knowledge likewise characterizes existence or reality. But this is the postulate and raison d'être of all knowledge; namely that knowledge, in virtue of its proper character, is knowledge of reality. Hence we have a means of characterizing reality or real being. What really exists is always subject and object together- mind in correlation with matter, or self in union with and yet distinction from the things it apprehends.

¹The full and correct phrase would be 'known to exist, just as it is known, independently of its being known.'

While, however, Ferrier thus shows that if knowledge as such is knowledge of reality, an understanding of the implicates of knowledge will enable us to pass thence to a characterization of being, the condition remains a mere postulate without any basis of fact, unless we recognize that knowledge has no character other than that of being a knowledge of the reality it interprets. Ferrier's treatment of knowledge is inconsistent with the fundamental unity of knowledge with the reality known. He supposes that the material or content of knowledge is quite adventitious with respect to its form or constitution; that the nature of knowledge is independent of that of being. While existence, if it is to be known at all, must have the character required by the constitution of knowledge; the constitution of knowledge is, in Ferrier's view, indifferent to the 'things' that it knows. He insists, indeed, that one feature in whatever is known must be a mind or self; but he also insists that the other feature might be anything. The one indispensable requisite of knowledge is the form- mind and some material, self and some thing. But what the material is, Ferrier regards as irrelevant to the nature of knowledge. The source or medium of its apprehension is different from knowledge; it is not thought, but sense, which is an aspect of experience quite alien to knowledge and only contingently related to it as a means of affording some content on which it may work. This gives the nature of the matter or things, as distinct from the mind or self, which knowledge involves. Sense is thus (at least potentially) variable, knowledge is invariable; or the form of knowledge is constant, while its material or sense-content is inessential to the form.

But what this doctrine involves is that knowledge has been conceived from the outset in abstraction from the concreteness of experience. Ferrier's doctrine of the contingency of sense is the counterpart of an abstract or formal view of knowledge. This is indicated in his admission that, while sense as we know it is not an indispensable condition of knowledge, some analogous mode of apprehension is essential. Ferrier's investigation and its results thus concern the form of knowledge not as expressing or expressed in its material, but in contradistinction to it. And consequently the implicates which the inquiry discloses are as formal as the inquiry itself: they are not actual constituents of experience, but its formal or logical conditions.

Chapter V

THE PHILOSOPHY OF EXPERIENCE AND THE SYSTEMATIZATION OF SCIENCE

The need for an inquiry that shall be distinguished as necessarily precedent to all other inquiries is, as we have just seen, the main implication of Ferrier's conception of philosophic method. The failures and antagonisms of philosophy are due, he maintains, to our asking questions and attempting to obtain answers to them without going behind these to the initial question, on the answer to which the answers to all others depend. "Every question in philosophy is the mask of another question; and all these masks and masked questions require to be removed and laid aside, until the ultimate but truly first question has been reached. Then, but not till then, is it possible to decipher and resolve the outside mask, and all those below it, which come before us in the first instance."¹ "We have tried to go to the end, without having first got to the beginning."² What Ferrier desiderates, as the true principle of philosophic method, is that we should put first questions first; and his index to the truly first question in philosophy is that in attempting to answer any other question we are inevitably brought round to it. In order to our obtaining a significant answer to a question, the first requisite is to understand precisely what is implied in the question itself, for only

¹ Institutes of Metaphysic, introd., §16.

² §17.

then can we understand the import of any answer that is forthcoming; and this is possible only by a recurrence to the fundamental question or questions that give their character and significance to all the others. Only by such procedure are we enabled to advance, not alone to the solution of philosophic problems, but to the intelligible setting of the problems to be solved. And in philosophy the purport of problems is peculiarly significant; for it is its function to exhibit problems in their origin and relations. This criticism of questions no less than of answers is, Ferrier contends, an essential feature of philosophy. Philosophy has not only to ask questions, but to see how the questions arise, and what accordingly are the precise bearings of the answers that are given. "It must show the exact point where every opinion and every controversy in philosophy takes off from the tap-root or main trunk of the great tree of speculation."¹

As we have seen, Ferrier finds the fundamental question of philosophy in the inquiry, What is the essential character of knowledge? or, What is involved in anything's being known? He accordingly considers his critical inquiry concerning the implications of knowledge the sole key to the proper asking of philosophic questions, and the means therefore of defining the exact bearing of any controversy and understanding the real significance of particular theories. The controversy as to the mutual independence of mind and matter, for example

¹ § 32.

should be recognized as having its primary significance in the question whether mind and matter are known in isolation from each other. That mind and matter are not known independently of each other- and in accordance with the fundamental character of knowledge, not thus knowable- implies that, as known, they are not existents preconditioning knowledge but features or aspects within knowledge. Consequently when we proceed, on the assumption that knowledge as such is knowledge of reality, to characterize existence in conformity with the character of knowledge; what we are entitled to assert is that mind and matter do not exist, as they are known, either independently of their being known or in independence of each other. All that is knowable is always mind and matter, or self and things, in correlation with each other. Any discussion about the existence of mind and matter is thus dependent on the prior question as to their knownness or knowability. Stated generally, the problem of knowledge precedes and qualifies the problem of being.

When we rid Ferrier's philosophy of the initial abstraction of the nature of knowledge from that of being, and the consequent transition to existence by means of an unprovable assumption, what this theory imports is a penetrating apprehension of the meaning of the start from experience. The principle of Ferrier's method is that we must allow all questions of existence "to be determined by the result of the inquiry into the actual character and constitution of knowledge." But if the nature of knowledge is independent of that of the

reality known, this procedure is futile. It can seem feasible at all only by transforming formal conditions into actual existents, or prejudging the nature of reality on the basis of an abstract treatment of knowledge. If, on the contrary, knowledge and reality are not considered as in any way independent and are allowed to disclose their characters only through an examination of what they are in relation to each other, Ferrier's conception then resolves itself into an assertion of the ultimate implication of the experiential method. This implication is, that as experience is our sole criterion and warrant for the being of anything whatsoever, the problem of being is the problem, what anything is for knowledge.

The significance of the method initiated by Ferrier is brought out more fully in the philosophy of John Grote. The main source of philosophic error and antagonism, which Ferrier finds in the lack of accurate definition of problems, Grote describes as the confusion between different viewpoints.¹ The first requisite for the furtherance of any inquiry is a clear understanding of the point of view from which it has to be undertaken; which is equivalent to an apprehension of what the inquiry precisely is. If we fail to discriminate the standpoints of different investigations, the inevitable result is that each of them suffers, and either no distinct answers are obtainable or such as present themselves are misconceived by being given a false

¹Exploratio Philosophica, pt. i, introd., esp. pp. ix-xv.

significance. In especial, Grote insists, we must distinguish between the philosophic and the scientific viewpoints. The former is the fundamental and the only complete view. The latter always involves an abstraction which is made for the purpose of some particular inquiry. In general, any inquiry fails of being philosophic in so far as it treats either knowledge or existence as independent of the other. In the view of physical science, for example, things exist quite the same whether they are known or not. From this point of view the existence of things is the prior fact and consciousness or knowledge of them an inessential supervening fact. From the epistemological standpoint, on the contrary, knowledge is the essential fact and existence a subordinate or secondary one. Unless we recognize these differences there will be continual confusion both as to the nature of our inquiries and the import of their results.¹

As regards philosophic method what this conception mainly implies is, in the first place, that the viewpoint of psychology is inadequate in philosophy. Grote, like Ferrier, is concerned to differentiate the philosophic inquiry from all treatises in the 'philosophy of the human mind'; their common feature being that they do not keep distinct the problems of psychology and metaphysics. The confusion of the two points of view usually appears (as in Locke's philosophy and again in Hamilton's) in the twin-assumptions of a material world

¹ Ch.1; cp. pp. 17-8, 83-4.

existing independently of being known and a mind or consciousness which knows this independently existing world. Or if this supposition is rejected (as in the doctrines of Hume and Mill), the confusion is still apparent in any account of consciousness that deals with it as at once the only originative source of the content of knowledge and one special object of investigation among others. In opposition to such procedure Grote contends that the inquiry for which all known existence is phenomenal to consciousness and has no meaning apart from consciousness, is fundamentally different from that in which consciousness is viewed as itself an existent conditioned by other existents.¹ The one is the philosophical, the other the psychological problem. But when this distinction is recognized (as in Ferrier's treatment) and consciousness is made the sole guarantee and means of reference concerning the character of any and every existent, it is still requisite to discriminate the logical and the metaphysical standpoints.² The counter abstraction to the investigation of existence taken apart from its relation to the consciousness of existence, is the investigation of knowledge apart from consideration of what is known. Knowledge, so viewed, is an instrument applicable to any conceivable reality that conforms to its inherent constitution, but it-

¹Pp.59,109,163,177.

²Grote's exposition is not itself always quite free from confusion between them.

self independent of the reality known. On this supposition knowledge is no longer inessential to facts but the facts that come to be known are inessential to the nature of knowledge. The inevitable result of such an assumption is that unless we subsequently surmount our limited viewpoint we mistake our logical abstractions for realities or 'realize our notions'; which usually issues in the supposition that we do not know reality as it is but only such modifications of it as are conformable to the principles of knowledge, or, if this conception is avoided, in the assumption of a pre-established harmony between knowledge and reality.

When, on the contrary, we adopt the fundamental or philosophical viewpoint we have to recognize that knowledge and existence are neither independent of each other nor require to be extraneously connected by the supposition of an inexplicable congruity between them. For the conception of being and knowledge as happening somehow to be conformable to each other there must be substituted the principle that each is an abstraction from the reality which always includes both features- a knowing and a known. Only because knowledge, taken by itself, is an abstract feature of the concrete reality of our experience, can we say that reality is essentially knowable or that knowledge is essentially knowledge of reality. The principle which Grote's philosophy presents as 'the basal fact' for all inquiry- the

fund
essential unity of knowing and being- is already contained in Ferrier's statement that 'knowledge of existence is alone true existence. But Grote is truer than Ferrier to the implications of the doctrine both as regards the characterization of knowledge and the interpretation of reality. For in his view there is no fundamental opposition between thought, as the form or character of knowledge, and sense, as constituting or supplying its material; and the form of knowledge is expressly regarded as nothing else than the form or meaning already implicit in its material and awaiting not moulding but recognition or elicitation.¹

It is involved in this view that there can be no distinction between 'subjective' and 'objective' contributions to knowledge or different sources and natures for 'principles' and 'facts'. The subjective and the objective are fundamentally the knowing and the known as two united though distinguishable aspects of our experience. The union of subjective and objective in a common reality or single experience is the basis and warrant of whatever is known. This is immediacy of experience. The distinction of them, which is notice or definition of immediacy, is the germ of knowledge. All consciousness involves these two aspects. Without the indistinction of being and knowing there would be no reality or truth to know, and without their distinction there would be nothing known. The function of knowledge is

¹Pt.ii,bk.ii,ch.1-2.

the progressive definition or characterization of what is contained in immediacy. "This", says Grote, "is knowledge in virtue of its uniting trueness with definiteness: it is true so far as it is a real development of the original trueness or fundamental experiences: it has definiteness given to it, and is thus made into knowledge by reflexion, which reflexion or distinctification must not be such as to alter the trueness."¹

According to this conception, therefore, the experiential method in philosophy means the study of experience without the use of the presuppositions necessary for this or that partial and limited inquiry. The basis of all knowledge is experience, and whatever we come to know about existence is an interpretation of our experience as an immediate or indefinite presentment of reality, which passes into definiteness according to our appreciation of what it contains. We start from reality as it is actually present in our experience, and every phase or aspect of known existence is this reality taken in some more or less definite mode or character of its being. All knowledge is thus experiential; and philosophy is knowledge at the most general and fundamental standpoint we can adopt, in contradistinction to inquiries dealing with one or another of the aspects of existence thus distinguished and separated off in our reflexion from the whole.

¹ II, 182.

Grote's expression of the nature and function of philosophy may fairly be regarded as both an early and a representative account of the conception of philosophic method underlying present-day inquiry. In whatever way different thinkers state their method, to whatever extent they are true to its requirements, and whatever results they obtain as to the nature of reality, their general conception of method is of this kind.¹ There is, however, a further point to be considered before we are in a position to sum up the results of our survey. Although philosophy is thus distinguished from the various special sciences by the ultimate and universal character of its standpoint and therefore of its attitude to experience, it is nevertheless in intimate union with them both as regards its method and its precise function and significance. And we have to ask what exactly is involved in this unity and distinction of philosophy and science. More definitely, we must inquire in what way or by what means philosophy is equivalent to the systematization of the sciences. The chief English exponent of the view that philosophy has no meaning except as being the totality of science is Herbert Spencer, whose conception may be taken as typical of recent statements emphasizing the unity of philosophy and science. We have to inquire, accordingly, whether he gives an adequate statement of the nature and function of philosophy, or how

¹The experiential method in philosophy has been expounded and inculcated most clearly and forcibly by Mr. S.H. Hodgson (Metaphysic of Experience, bk. i, ch. 1.

his account is to be supplemented or corrected in view of the development which we have been considering.

The basis of Spencer's conception of the relation of philosophy to science is his doctrine that knowledge is confined to phenomena or appearances, as distinct from the reality manifested in appearances. But this doctrine is self-contradictory.¹ Knowledge is indeed phenomenal, or of phenomena; but only in the sense that phenomena are (or express) in varying degree a knowledge of reality, and this implies that it is never merely phenomenal. Reality or existence is just that which is phenomenal to knowledge, that is, which it is the function of knowledge progressively to interpret; and although it may be relatively unknown, it cannot be in its nature unknowable. The doctrine of unknowable existence is in truth the last and supreme form of the conception of existence as wholly independent of knowledge. The source of both conceptions is the influence in philosophy of presuppositions relevant only to other spheres of inquiry. For detailed investigation of any existent - say, the material world - we must consider its existence to be prior to and independent of the knowledge of it, leaving out of account that its existence is ultimately only conceived as a mode of our viewing or interpreting reality. Similarly, for a consideration of knowledge - the manner as distinguished from the matter of our knowing - we must have some existence posited as lying be-

¹This is shown in one of the papers above referred to.

yond any and every specific phase of knowledge. But from the philosophical standpoint we must recognize that knowledge and reality differ only inasmuch as knowledge is that feature of reality in which it gradually becomes determinate or acquires character and meaning for us.

The significance of Spencer's doctrine for the relation subsisting between philosophy and science is that, by denying that the knowledge of phenomena is a graded and progressive knowledge of reality, it leaves us without a means of determining the true purport of any inquiry or its results as an interpretation of experience. Spencer defines philosophy as the system of the sciences, or knowledge as a coherent whole. The function of science, he says, being to organize or unify knowledge, by means of analysis and synthesis, or generalization and reconstruction, that of philosophy is to carry this unification to completion by organizing the various branches of science. In the words of his definition: "Knowledge of the lowest kind is un-unified knowledge; science is partially-unified knowledge; philosophy is completely-unified knowledge."¹

But if the sciences are to be systematized and knowledge made coherent it must be according to some definite method or principle. Spencer's principle for the classification of the sciences is their degree of abstractness or concreteness. A science is concrete in proportion as it deals with anything in respect of the full actuality

¹First Principles, §37.

of its being, abstract in proportion as it disengages the properties and relations of things and treats of these by themselves. The limit of abstractness is where all other attributes are neglected save the most general relations under which things are presented to us. Thus Spencer arrives at his tripartite classification of the sciences as falling under concrete science, abstract-concrete science, or abstract science; which deal respectively with existences in their complex totalities, with the several factors or aspects which complex existences present, and with those forms of relation which obtain between all varieties of existence.¹

As regards the interrelations of the sciences as thus classified, Spencer, while denying that there is any hierarchy or serial order of the sciences, such as is presented in a scheme like Comte's,² emphasizes their mutual dependence and influence. This interdependence and reciprocity of all spheres of investigation is a constant and an ever-increasing feature of their progress. "Throughout the whole course of their evolution there has been a continuous consensus of the sciences" — a co-ordination of their processes and results which has been at once the outcome and the sign of each stage in the development of

¹Classification of the Sciences, pp. 76-8, 99-103 (Essays, vol. ii, pp.

²It is worth noticing, however, that the methods employed by Comte and Spencer for reaching a classification of the sciences are virtually identical, and that the difference in their schemes tends, so far at least as the main principles are concerned, to disappear in the actual working of their organization of knowledge.

knowledge and the point of departure for the next.¹

But Spencer's method of setting about the classification of the sciences has a defect which is the counterpart of his doctrine that knowledge is only of appearance and not of reality. The implication of his procedure is that philosophy is in no respect anterior to science. Philosophy as signifying a knowledge of reality having been set aside as impossible, it remains only in the form of a co-ordination of the sciences as a knowledge of phenomena. In so far as it is any-wise distinct from science, it follows rather than precedes the various separate inquiries, and has its sole function in combining their conclusions so as to yield a totality of knowledge. But neither the place of the several sciences in the scheme of knowledge nor the significance of their results can be determined otherwise than by viewing them as affording -each in its own character and measure- a knowledge of reality; and the means or criterion of their evaluation cannot be found in the mere separate sciences themselves. Spencer begins from the sciences as so many isolated inquiries and classifies them according to certain features of likeness and difference which they show; but his principle can give no fully articulated scheme, and in his use of it he does not even indicate how such a scheme could be even approximately formed. And as with the character of the sciences themselves, so with their results. These are to be co-ordinated or

¹ Genesis of Science (Essays, vol. ii), pp. 27-9.

systematized simply by endeavouring to carry the different generalizations further and reach a principle more general than all, and then using this principle to reinterpret the conclusions that have been reached. But this conception of philosophy supplies no adequate means of placing the sciences and evaluating their results in reference to our experience as a whole. It omits an essential feature in the relation of philosophy to science. Spencer himself endorses Bacon's metaphor of the trunk and the branches.¹ But, as we saw, the full force of this metaphor is not exhausted in the conception that 'the sciences had a common origin' or that as knowledge progresses there is a gradual differentiation of sphere and of function. It signifies that they have no life apart from the parent stem. Spencer recognizes this in a partial way in maintaining that 'the sciences can be advanced only by combining them' and that the complement of their differentiation is their increasing integration. The sciences, he says, not only diverge; they reunite. "They inosculate; they severally send off and receive connecting growths; and the intercommunion has been ever becoming more frequent, more intricate, more widely ramified." But if the sciences diverge from a common root, and if they are dependent for their growth on maintaining their contact with the originative life and their unity with the one common function, then philosophy must

¹Genesis of Science, pp. 28-9; Classification, p. 94.

have some other significance than that of simply being a posterior co-ordination of the results of science. If the sciences are out-growths from philosophy and advance only by 'ingrowths' into the common life, then their results can be co-ordinated, and the sciences themselves classified with a view to such co-ordination, only by reference to the principles upon which they have severally diverged and the consequent significance of their redintegration. In other words, the method by which the sciences are to be arranged and classified cannot be merely that of a posterior examination of them as though they were intrinsically independent of the method of their origin. On the contrary, it must be the function of philosophy, as the source and means of their differentiation, to give import to the co-ordination of science by showing the significance of the several branches in the common life of the whole.

It is significant, as showing how indispensable some sort of prior inquiry is, that Spencer himself begins his 'system of philosophy' with a criticism of knowledge. Without this epistemological basis his own system of knowledge would be entirely meaningless. He holds, as the outcome of his criticism, that the true or actual nature of reality is unknowable, and that the ideas by which we endeavour to apprehend and express this nature not only fall short of being adequate

to it, but are merely appearances or apparent knowledge intrinsically other than a knowledge of reality. None the less these symbols whereby we represent to ourselves the unknowable reality form the content of the sciences and the materials for combining them into a system of knowledge. We have seen reasons for rejecting this conception. And we have further found, as the result of our historical study of the development of English philosophic method, that the inquiry precedent to the special sciences is -not simply a theory of knowledge, whether its conclusion be that reality is unknowable or that it is essentially the knowable- but a fundamental investigation of the nature of experience as the basis of all subsequent inquiries, and the ultimate criterion of their scope and significance. It remains to summarize our conclusions from the whole development, as a statement of the method of philosophy and of its function in or as the totality of knowledge.

CHAPTER VI

(CONCLUSION)

THE CHARACTER AND FUNCTION OF PHILOSOPHY

The aim of English philosophy has been to conceive and establish knowledge in such wise as to unite the distinctive nature of philosophy with the general marks and the special conclusions of the sciences. It has sought to do this by insisting that there is a common method for all knowledge alike, and that the distinctions between different inquiries concern not so much the nature of their general procedure as the point of view they severally adopt in dealing with a common material - the range of their outlook or the special base of their operations. Beginning with the indifferenciation of philosophy and science, or their distinction only as signifying respectively the more and the less fundamental forms or spheres of investigation, the development has brought out with increasing clearness the nature and import of this distinction. Concerned at first with articulating the method of knowledge in general, and treating philosophy (so far as differentiated from knowledge generally) almost as an exposition of the nature of scientific method, taken in the widest sense of the whole procedure of knowledge in its function of endeavouring to apprehend and express reality; the development proceeds through the virtual identification of philosophy with one or another of the

special disciplines, conceived either as amenable to the common method of science and differing from the other sciences only as preceding them and forming the foundation for their procedure and the warrant for their scope and significance, or else as a complementary mode of inquiry undertaken from another standpoint than that of the sciences generally; and culminates in the conception of philosophy as universal knowledge, related to the particular sciences both as preceding and defining their inquiries and also as systematizing their conclusions.

The means for this unification of philosophy and science has been taken throughout the development to consist in making the method of experience the one common method of knowledge. Recognizing that ~~the~~ scientific method is essentially experiential, English philosophy has sought to show that the true method of philosophy is likewise experiential. And the evolution of English philosophic method has thus consisted in the definition and application of what has been held, at the various stages of its progress, to constitute the experiential method in philosophy. At the outset this method is regarded as mainly implying faithfulness to fact through all the different spheres of knowledge and a gradual and regular transition from fact to fact and sphere to sphere. Knowledge is thus conceived as a tho-

rough and connected investigation of the whole field of experience, advancing by uniform process from carefully ascertained and well-established principles and basing its remotest conclusions on what is ultimate and fundamental. But it soon becomes evident - it was implied from the first - that a stable and intelligible system of knowledge must be grounded on a critical study of the meaning and range of knowledge itself. And then the experiential method in philosophy is considered equivalent to the application of the general method of science to ascertain the nature of the processes, the growth, and the tests of knowledge. The next step is the conception that this critical inquiry, which is an essential preliminary or counterpart of the work of the sciences, cannot be merely on a level with other inquiries, but gives to the processes and standards of knowledge their whole significance as conveying and certifying a veritable apprehension of reality. Lastly it appears that the fundamental inquiry is the application of the common method of knowledge to experience in its widest extent and at its deepest level, in contradistinction to limited views of its nature and content adopted for special purposes; and that only in this way can the distinction and relation of knowledge and reality, as well as their several forms and grades, be made manifest.

But from the very beginning of the development there has gone

the further thought that the true method of experience was to be gained by getting rid of assumptions that had grown up in the course of knowledge and prevented a clear and unobstructed view of the facts. Thinker after thinker not only maintains that a proper method is the great desideratum for the establishment of a sound body of truth, and that the only proper method is that of experience, but contends further that the start from experience consists in the renunciation of prepossessions and the beginning anew from consciousness as the prime source of knowledge. Whether this contention takes the form of an animadversion on all preconceptions and theories, as being unwarrantable obstacles to the attainment of truth, and thus verges on denying the need and disowning the use of hypotheses, or consists in emphasizing rather the need of precision and tenacity in the employment of them; and again, whatever is the exact nature of the assumptions discarded and retained at different steps in the development, and the conception that is formed by the various thinkers of the influence and import of presuppositions in determining the character of any particular inquiry; the principle is the same - that, if our method is to be adequate to its task and our philosophy is to be truly experiential, we must get behind the conceptions which we habitually employ for the interpretation of experience, see them in

their origination and proper setting with reference to our experience as a whole, and make use of this knowledge in our endeavour to establish a coherent system of truth.

Again, while the connexion of the different sciences has been variously sought in the detection of common principles suggested by analogy or proved by the applicability of a uniform mode of explanation; in the fundamental principles of knowledge as the common medium of their inquiries; and in their relations to one another as expressing different degrees of abstraction from the concrete reality of experience; - in each case the correlation of the sciences has been regarded as an intrinsic quality or an integral part of the method of knowledge.

There are thus several distinct but connected lines on which the development of English philosophic method has proceeded - the union and yet distinction of philosophy and science, the explication of the experiential method, the rejection of irrelevant presuppositions, and the interconnexion of all inquiries as portions of a single whole. And these lines converge to suggest a total view of philosophy and its method as the outcome of the development. How then can we state this outcome and so express the result of our study?

The one method of knowledge is the method of experience. Any

other alleged method is got by abstracting some feature from its nature and using this instead of the method as a whole. Whatever distinctions are introduced into the unity of knowledge are themselves an outcome of the method of experience; and the way in which these differences are to be again reconciled must be found in the same source. The general proof that this is the only method is, then, that the very means of adopting any contradistinguished method are themselves due to it. When this is once recognized, the problem of method resolves itself into the question of the nature of the experiential method; with the implied questions of its relation to the separation of knowledge into distinct and partially independent inquiries, and its significance for the task of their reunion.

The experiential method, as the common method of all knowledge, is the observation or notice of experience - passing, through combined analysis and synthesis or discrimination and relation, into interpretation - of experience, and thereby of reality as what is contained or implied in experience. This does not mean that the nature and content of experience are somehow given in ~~of~~ to consciousness prior to the work of knowledge, just as they are afterwards taken up into knowledge: Rather does it mean that both the distinctions and connexions - indeed, the whole content and meaning of experience - arise into consciousness by the effort to interpret it. It implies,

that is, that experience itself has always these two aspects of interpretation and a somewhat interpreted, and that knowledge is distinguishable from it only as indicating the gradual apprehension of reality by the giving character and meaning to our experience.¹

From this general statement we can pass to the nature of the experiential method as itself giving rise to the distinction of different inquiries and the mode of their unification. Reflective interpretation of experience differentiates it into a variety of factors or aspects, each of which, when once it is definitely distinguished and apprehended as a means for the characterization of reality, may and does become the basis of more particular investigation dealing with reality only from that standpoint. Experience is thus differentiated into subject and object, consciousness and existence, mind and matter, knowledge and will, and so forth, making possible a whole complex scheme of inquiries ever dividing and subdividing into more detailed studies.

It is commonly recognized that the separate sciences are each based on some fundamental notion or presupposition, which defines and limits the sphere of its investigation. Thus, geometry presuppo-

¹The practical significance of knowledge enforces this truth, a fuller statement of which is given in the subsequent chapters.

ses and is limited by its reference to space; physics has matter and motion for its province; psychology is concerned with mind or consciousness; and so on. But it is not so generally recognized that each of these concepts and spheres is got by separating off in our reflexion on experience some feature or aspect as the basis of specialized and detailed inquiry. Apart from this the special sciences would be devoid of significance, and indeed could never have arisen or been conceived as the separate sections in the scheme of knowledge. It is only on account of its having a prescribed sphere on a basis of a definite postulate concerning reality, that it is enabled to proceed with its own investigation in separation from others, while yet holding its results combinable with those of the other departments of knowledge; and it is only because of the underlying presupposition, and the sense (however vague and general) that this has a determinate place in the scheme of knowledge and in the interpretation of reality, that any particular inquiry can be taken as promoting and affording knowledge at all.

But philosophy can admit of no unexamined presuppositions.¹ It cannot assume, for example, either that experience is always subjective, that is, a portion of the course of consciousness of an individual subject, or that it is objective as implying something beyond

¹Cp. Hegel's statement: "All assumptions and postulates must be left behind at the entrance to philosophy." (Logic, English trans., p.

the consciousness of the individual subject; nor again can it assume that all experience is fundamentally of the nature of knowledge, or of will. It must start from experience without such assumptions and allow these distinctions and their connexions to emerge in the course of the interpretation of experience. Accordingly, philosophy begins at a point further back or deeper down than any of the special sciences: it is the prerogative of philosophy and a character that differentiates it from all other disciplines, that it seeks to begin at the beginning in the investigation of experience.

No doubt the sciences also return upon their presuppositions to examine and criticize them. It is part of their procedure not only to view all reality in the light of their fundamental assumptions, but also to reconsider these assumptions in the light of the results obtained. This is a means both of differentiating and of interconnecting allied inquiries. But no special science, as such, goes behind its ultimate concepts and postulates and seeks to determine their place in the scheme of knowledge. It is the task of philosophy to inquire into the meaning, the position, and the relations of the concepts on which the sciences are based; and this it does, and can only do, by showing their points of departure and consequent import in the investigation of experience as a whole.

But philosophy not only begins at the beginning, it goes on to the end. Each of the special sciences, as such, although following out its own investigation to the furthest limits, is precluded by its own nature and procedure from uniting its results with those of other sciences into an intelligible system. It is the function of philosophy not only to examine and criticize all the presuppositions of the sciences, but also to endeavour to unify their conclusions so as to construct a system of knowledge. This it does in virtue of the place and significance assigned by it to the results of the several sciences on account of their respective presuppositions. Only in view of the relations that obtain between the ultimate concepts and assumptions of the various sciences, as each respectively defining the plane on which experience is taken and reality is interpreted, can the results of the sciences be placed and systematized so as to show their significance for the interpretation of experience and of reality as a whole. No doubt, as before, the established results of the sciences react on the scheme of knowledge and help to determine their own ultimate significance. But they do so only by mutual adjustment and readjustment, and the final say is the prerogative of the entire system of knowledge.

Thus, while philosophy and science have a common method, there

is nevertheless a difference in their mode of procedure and the character of their undertaking. The method of philosophy, as well as of science, is the experiential method. But by beginning at the beginning and going on to the end, philosophy stamps itself as having a differentiating character of its own, which is not adequately expressed even by defining it as the system of the sciences or the systematization of science - unless we recognize that this involves that it logically precedes as well as follows them, and that its systematization of their results is no mere generalization or summation but a reconstruction by reference to their import and relations within the totality of experience.

Indeed the philosophical method is peculiarly experiential in its character. For, in the first place, it takes nothing for granted and yet it leaves nothing out of account. And further - what is implied in this and gives it its chief significance - philosophy alone treats experience and reality in their concrete actuality; since any inquiry that begins from an assumption concerning them, and so contracts its sphere, involves an abstraction (however hypothetically taken and methodologically needful) from the truth that is appreciable only at the central standpoint. This is what explains, and alone

can justify, the claim that philosophy gives a knowledge of reality as it truly is, whereas the sciences by themselves tell us only what it appears to be from particular points of view. But the appearances are the very stuff and means of the knowledge of reality.

Neither philosophy nor science alone, then, can yield the truth: together they are competent, apart they are impotent. Without some tentative scheme of knowledge suggested by a more or less explicit and more or less adequate attempt to adopt the fundamental and universal point of view for investigating experience, the particular sciences could never get to work on their detailed inquiries at all; and apart from reconstruction on the basis of this scheme their conclusions would have no determinate meaning and value. But the dependence is reciprocal. For without the particular inquiries the general outline would get no definite and concrete content. Moreover, the scheme of knowledge and the systematized conclusions must be tested by the further working of the sciences on the lines which the system suggests. A system of philosophy is thus a scheme of the sciences, obtained by determining the nature and relations of their respective viewpoints for the interpretation of reality, and a connected view of their conclusions in accordance with it. Philosophy by itself can yield no full and definitive answers to the problems which

it raises. But it sets the problems and so can estimate the significance of any answer that is proffered; and on the basis of results so far attained it can, at each stage, indicate the forms which the problems now assume and the lines of their solution. And any system of philosophy is valuable just in proportion to the thoroughness of its analysis and the comprehensiveness and suggestiveness of its synthesis.¹

¹These two go hand in hand. Cp. the corresponding principle, which Spencer states in continuation of a passage already quoted:

"There has all along been higher specialization, that there might be a larger generalization; and a deeper analysis, that there might be a better synthesis. Each larger generalization has lifted sundry specializations still higher; and each better synthesis has prepared the way for still deeper analysis." (Genesis of Science, p.29.)

There is thus a methodological relation between the critical or regulative and the constructive or constitutive functions of philosophy - the former logically preceding and initiating the work of the sciences, the latter following and comprising them - corresponding to that between the inductive and deductive aspects of scientific procedure, or again between observation and experiment or the suggestion and the testing of hypotheses. The experiential method,

in philosophy as in science, is at once analytic and synthetic, and combines the tentative character of discovery with the evidence or proof that attaches to system.

The significance of the experiential method, then, as the method of philosophy, is, in the first instance, that it involves a community of nature and procedure underlying the differentiating features and the distinctive functions of philosophy and science, enabling them together to exhibit the character of progress and infinitality as pertaining to all knowledge in its work of interpreting reality. But further, as is shown by a study of the development in outcome or content, which is coincident with the development in method in English philosophy, the philosophy of experience is alone fitted at once to justify and to reconcile the various distinctions, and to surmount the provisional abstractions, that are made during the course of knowledge. As it does not start with the distinction (expressed or implied) between experience and reality, between knowledge and existence, between mind and matter, but leaves these and every subordinate distinction and their implicated relations, along with the determinate problems which they raise, to emerge in and through the work of interpretation itself; - it puts us on the only right path for seeking and furthering their solution.
