

new powers or works," or "to extend more widely the limits of the power and greatness of man."² Nevertheless, it is not to be imagined that by this being proposed as the great object of search, there is thereby excluded all that has hitherto been looked upon as the higher aims of human life, such as the contemplation of truth. Not so, but by following the new aim we shall also arrive at a true knowledge of the universe in which we are, for without knowledge there is no power; truth and utility are in ultimate aspect the same; "works themselves are of greater value as pledges of truth than as contributing to the comforts of life."³ Such was the conception of philosophy with which Bacon started, and in which he felt himself to be thoroughly original. As his object was new and hitherto unproposed, so the method he intended to employ was different from all modes of investigation hitherto attempted. "It would be," as he says, "an unsound fancy and self-contradictory, to expect that things which have never yet been done can be done except by means which have never yet been tried."⁴ There were many obstacles in his way, and he seems always to have felt that the first part of the new scheme must be a *pars destruens*, a destructive criticism of all other methods. Opposition was to be expected, not only from previous philosophies, but especially from the human mind itself. In the first place, natural antagonism might be looked for from the two opposed sects, the one of whom, in despair of knowledge, maintained that all science was impossible; while the other, resting on authority and on the learning that had been handed down from the Greeks, declared that science was already completely known, and consequently devoted their energies to methodising and elaborating it. Secondly, within the domain of science itself, properly so called, there were two "kinds of rovers" who must be dismissed. The first were the speculative or logical philosophers, who construe the universe *ex analogia hominis*, and not *ex analogia mundi*, who fashion nature according to preconceived ideas, and who employ in their investigations syllogism and abstract reasoning. The second class, who were equally offensive, consisted of those who practised blind experience, which is mere groping in the dark (*vaga experientia mera palpatis est*), who occasionally hit upon good works or inventions, which, like Atalanta's apples, distracted them from further steady and gradual progress towards universal truth. In place of these straggling efforts of the unassisted human mind, a graduated system of helps was to be supplied, by the use of which the mind, when placed on the right road, would proceed with unerring and mechanical certainty to the invention of new arts and sciences.

Such were to be the peculiar functions of the new method, though it has not definitely appeared what that method was, or to what objects it could be applied. But, before proceeding to unfold his method, Bacon found it necessary to enter in considerable detail upon the general subject of the obstacles to progress, and devoted nearly the whole of the first book of the *Organum* to the examination of them. This discussion, though strictly speaking extraneous to the scheme, has always been looked upon as a most important part of his philosophy, and his name is perhaps as much associated with the doctrine of *Idola* as with the theory of induction or the classification of the sciences.

The doctrine of the kinds of fallacies or general classes of errors into which the human mind is prone to fall, appears in many of the works written before the *Novum Organum*, and the treatment of them varies in some respects. The classification in the *Organum*, however, not only has the

¹ *Fil. Lab.*, 5; cf. *N. O.*, i. 81; *Val. Ter. (Works)*, iii. 222, 233; *New Atlantis (Works)*, iii. 156.
² *N. O.*, i. 116. ³ *Ibid.*, i. 124. ⁴ *Ibid.*, i. 6.

author's sanction, but has received the stamp of historical acceptance; and comparison of the earlier notices, though a point of literary interest, has no important philosophic bearing. The *Idola*,⁵ false notions of things, or erroneous ways of looking at nature, are of four kinds: the first two innate, pertaining to the very nature of the mind and not to be eradicated; the third creeping insensibly into men's minds, and hence in a sense innate and inseparable; the fourth imposed from without. The first kind are the *Idola Tribus*, fallacies incident to humanity or the race in general. Of these, the most prominent are—the proneness of the mind to suppose in nature greater order and regularity than there actually is; the tendency to support a preconceived opinion by affirmative instances, neglecting or throwing out of account all negative or opposed cases; and the tendency to generalise from few observations, or to give reality to mere abstractions, figments of the mind. manifold errors also result from the weakness of the senses, which affords scope for mere conjecture; from the influence exercised over the understanding by the will and passions; from the restless desire of the mind to penetrate to the ultimate principles of things; and from the belief that "man is the measure of the universe," whereas, in truth, the world is received by us in a distorted and erroneous manner. The second kind are the *Idola Specus*, idols of the cave, or errors incident to the peculiar mental or bodily constitution of each individual, for according to the state of the individual's mind is his view of things. Errors of this class are innumerable, because there are numberless varieties of disposition; but some very prominent specimens can be indicated. Such are the tendency to make all things subservient to, or take the colour of some favourite subject, the extreme fondness and reverence either for what is ancient or for what is modern, and excess in noting either differences or resemblances amongst things. A practical rule for avoiding these is also given: "In general let every student of nature take this as a rule, that whatever his mind seizes and dwells upon with particular satisfaction is to be held in suspicion."⁶ The third class are the *Idola Fori*, idols of the market-place, *i.e.*, errors arising from the influence exercised over the mind by mere words. This, according to Bacon, is the most troublesome kind of error, and has been especially fatal in philosophy. For words introduce a fallacious mode of looking at things in two ways: first, there are some words that are really merely names for non-existent things, which are yet supposed to exist simply because they have received a name; secondly, there are names hastily and unskillfully abstracted from a few objects and applied recklessly to all that has the faintest analogy with these objects, thus causing the grossest confusion. The fourth and last class are the *Idola Theatri*, idols of the theatre, *i.e.*, fallacious modes of thinking resulting from received systems of philosophy, and from erroneous methods of demonstration. The criticism of the demonstrations is introduced later in close connection with Bacon's new method; they are the rival modes of procedure, to which his own is definitely opposed. The philosophies which are "redargued" are divided into three classes, the sophistical, of which the best example is Aristotle, who forces nature into his abstract schemata and thinks to ex-

⁵ The word *Idolon* is manifestly borrowed from Plato. It is used twice in connection with the Platonic Ideas (*N. O.*, i. 23, 124), and is contrasted with them as the false appearance. The *εἰδωλον* with Plato is the fleeting, transient image of the real thing, and the passage evidently referred to by Bacon is that in the *Rep.* vii. 516 A. "καὶ πρῶτον μὲν τὰς σκιὰς ἂν βῆσαι καθορῆναι, καὶ μετὰ τοῦτο ἐν τοῖς ὄψεσιν τὰ τε τῶν ἀνθρώπων καὶ τὰ τῶν ἑλλάνων εἰδωλα, ὕστερον δὲ αὐτὰ." It is explained well in the *Advancement*, bk. i. (*Works*, iii. 287).
⁶ *N. O.*, i. 58.

plain by definitions; the empirical, which from few and limited experiments leaps at once to general conclusions; and the superstitious, which corrupts philosophy by the introduction of poetical and theological notions.

Such are the general causes of the errors that infest the human mind; by their exposure the way is cleared for the introduction of the new method. The nature of this method cannot be understood until it is exactly seen to what it is to be applied. What idea had Bacon of science, and how is his method connected with it? Now, the science¹ which was specially and invariably contemplated by him was Natural Philosophy, the great mother of all the sciences; it was to him the type of scientific knowledge, and its method was the method of all true science. To discover exactly the characteristics and the object of natural philosophy it is necessary to examine the place it holds in the general scheme furnished in the *Advancement* or *De Augmentis*. All human knowledge, it is there laid down, may be referred to man's memory, or imagination, or reason. In the first, the bare facts presented to sense are collected and stored up; the exposition of them is History, which is either natural or civil. In the second, the materials of sense are separated or divided in ways not corresponding to nature but after the mind's own pleasure, and the result is Poesy or feigned history. In the third, the materials are worked up after the model or pattern of nature, though we are prone to err in the progress from sense to reason; the result is Philosophy, which is concerned either with God, with nature, or with man, the second being the most important. Natural philosophy is again divided into speculative or theoretical, and operative or practical, according as the end is contemplation or works. Speculative or theoretical natural philosophy has to deal with natural substances and qualities, and is subdivided into physics and metaphysics. Physics inquires into the efficient and material causes of things; metaphysics, into the formal and final causes. The principal objects of physics are concrete substances, or abstract though physical qualities. The research into abstract qualities, the fundamental problem of physics, comes near to the metaphysical study of forms, which indeed differs from the first only in being more general, and in having as its result a form strictly so called, *i.e.*, a nature or quality which is a limitation or specific manifestation of some higher and better known genus. Natural philosophy is, therefore, in ultimate resort the study of forms, and, consequently, the fundamental problem of philosophy in general is the discovery of these forms.

"On a given body to generate or superinduce a new nature or natures, is the work and aim of human power. . . . Of a given nature to discover the form or true specific difference, or nature-engendering nature (*natura naturans*) or source of emanation (for these are the terms which are nearest to a description of the thing), is the work and aim of human knowledge."²

The questions, then, whose answers give the key to the whole Baconian philosophy, may be put briefly thus—What are forms? and how is it that knowledge of them solves both the theoretical and the practical problem of science? Bacon himself, as may be seen from the passage quoted above, finds great difficulty in giving an adequate and exact definition of what he means by a form. As a general description, the following passage from the *Novum Organum*, ii. 4., may be cited:—

"The form of a nature is such that given the form the nature infallibly follows. . . . Again, the form is such that if it be taken away the nature infallibly vanishes. . . . Lastly, the true form is such that it deduces the given nature from some source of being which is inherent in more natures, and which is better known in the natural order of things than the form itself."³

¹ *N. O.*, i. 79, 80, 98, 108. ² *Ibid.*, ii. 1.
³ This better known in the order of nature is nowhere satisfactorily

From this it would appear that, since by a nature is meant some sensible quality, superinduced upon, or possessed by, a body, so by a form we are to understand the cause of that nature, which cause is itself a determinate case or manifestation of some general or abstract quality inherent in a greater number of objects. But all these are mostly marks by which a form may be recognised, and do not explain what the form really is. A further definition is accordingly attempted in Aph. 13:—

"The form of a thing is the very thing itself, and the thing differs from the form no otherwise than as the apparent differs from the real, or the external from the internal, or the thing in reference to the man from the thing in reference to the universe."

This throws a new light on the question, and from it the inference at once follows, that the forms are the permanent causes or substances underlying all visible phenomena, which are merely manifestations of their activity. Are the forms, then, forces? At times it seems as if Bacon had approximated to this view of the nature of things, for in several passages he identifies forms with laws of activity. Thus, he says—

"When I speak of forms I mean nothing more than those laws and determinations of absolute actuality which govern and constitute any simple nature, as heat, light, weight, in every kind of matter and subject that is susceptible of them. Thus the form of heat or the form of light is the same thing as the law of heat or the law of light."⁴ "Matter rather than forms should be the object of our attention, its configurations and changes of configuration, and simple action, and law of action or motion: for forms are figments of the human mind, unless you will call those laws of action forms."⁵ "Forms or true differences of things, which are in fact laws of pure act."⁶ "For though in nature nothing really exists besides individual bodies, performing pure individual acts according to a fixed law, yet in philosophy this very law, and the investigation, discovery, and explanation of it, is the foundation as well of knowledge as of operation. And it is this law, with its clauses, that I mean when I speak of forms."⁷

Several important conclusions may be drawn from these passages. In the first place, it is evident that Bacon, like the Atomical school, of whom he highly approved, had a clear perception and a firm grasp of the physical character of natural principles; his forms are no ideas or abstractions, but highly general physical properties. Further, it is hinted that these general qualities may be looked upon as the modes of action of simple bodies. This fruitful conception, however, Bacon does not work out; and though he uses the word cause, and identifies form with formal cause, yet it is perfectly apparent that the modern notions of cause as dynamical, and of nature as in a process of flow or development, are foreign to him, and that in his view of the ultimate problem of science, cause meant *causa immanens*, or underlying substance, effects were not consequents but manifestations, and nature was regarded in a purely statical aspect. That this is so appears even more clearly when we examine his general conception of the unity, gradation, and function of the sciences. That the sciences are organically connected is a thought common to him and to his distinguished predecessor Roger Bacon. "I that hold it for a great impediment towards the advancement and further invention of knowledge, that particular arts and sciences have been disincorporated from general knowledge, do not understand one and the same thing which Cicero's discourse and the note and conceit of the Grecians in their word *circle learning* do intend. For I mean not that use which one science hath of another for ornament or help in practice; but I mean it directly of that use by way of supply of light and information, which the particulars and instances of one science do yield and present for the framing or correcting of the axioms of an-

explained by Bacon. Like his classification of causes, and in some degree his notion of form itself, it comes from Aristotle. See *An. Post.*, 71, b 33; *Topic.*, 141, b 5; *Eth. Nic.*, 1095, a 30.
⁴ *N. O.*, ii. 17. ⁵ *Ibid.*, i. 51. ⁶ *Ibid.*, i. 75. ⁷ *Ibid.*, ii. 2.

other science in their very truth and notion."¹ In accordance with this, Bacon placed at the basis of the particular sciences which treat of God, nature, and man, one fundamental doctrine, the *Prima Philosophia*, or first philosophy, the function of which was to display the unity of nature by connecting into one body of truth such of the highest axioms of the subordinate sciences as were not special to one science, but common to several.² This first philosophy had also to investigate what are called the adventitious or transcendental conditions of essences, such as Much, Little, Like, Unlike, Possible, Impossible, Being, Nothing, the logical discussion of which certainly belonged rather to the laws of reasoning than to the existence of things, but the physical or real treatment of which might be expected to yield answers to such questions as, Why certain substances are numerous, others scarce? or why, if like attracts like, iron does not attract iron? Following this summary philosophy come the sciences proper, rising like a pyramid in successive stages, the lowest floor being occupied by natural history or experience, the second by physics, the third, which is next the peak of unity, by metaphysics.³ The knowledge of the peak, or of the one law which binds nature together, is perhaps denied to man. Of the sciences, physics, as has been already seen, deals with the efficient and material, *i. e.*, with the variable and transient, causes of things. But its inquiries may be directed either towards concrete bodies or towards abstract qualities. The first kind of investigation rises little above mere natural history; but the other is more important, and paves the way for metaphysics. It handles the configurations and the appetites or motions of matter. The configurations, or inner structures of bodies, include dense, rare, heavy, light, hot, cold, &c., in fact, what are elsewhere called simple natures. Motions⁴ are either simple or compound, the latter being the sum of a number of the former. In physics, however, these matters are treated only as regards their material or efficient causes, and the result of inquiry into any one case gives no general rule, but only facilitates invention in some similar instance. Metaphysics, on the other hand, treats of the formal or final cause⁵ of these same substances and qualities, and results in a general rule. With regard to forms, the investigation may be directed either towards concrete bodies or towards qualities. But the forms of substances "are so perplexed and complicated, that it is either vain to inquire into them at all, or such inquiry as is possible should be put off for a time, and not entered upon till forms of a more simple nature have been rightly investigated and discussed."⁶ "To inquire into the form of a lion, of an oak, of gold, nay, even of water or air, is a vain pursuit; but to inquire the form of dense, rare, hot, cold, &c., as well configurations as motions, which in treating of physics I have in great part enumerated (I call them forms of the first class), and which (like the

¹ Valerius Terminusus, iii. 228-29.

² Cf. *N. O.*, ii. 27. Bacon nowhere enters upon the questions of how such a science is to be constructed, and how it can be expected to possess an independent method while it remains the mere receptacle for the generalisations of the several sciences, and consequently has a content which varies with their progress. His whole conception of *Prima Philosophia* should be compared with such a modern work as the *First Principles* of Herbert Spencer.

³ It is to be noticed that this scale of nature corresponds with the scale of ascending axioms.

⁴ Cf. also, for motions, *N. O.*, ii. 48.

⁵ The knowledge of final causes does not lead to works, and the consideration of them must be rigidly excluded from physics. Yet there is no opposition between physical and final causes; in ultimate resort the mind is compelled to think the universe as the work of reason, to refer facts to God and Providence. The idea of final cause is also the basis of the sciences which have to do with human action. (Cf. *De Aug.*, ii. cc. 4, 5; *Nov. Org.*, i. 48, ii. 2.)

⁶ *De Aug.*, iii. 4. In the *Advancement*, (*Works*, iii. 355) it is distinctly said that they are not to be inquired into. One can hardly see how the Baconian method could have applied to concrete substances.

letters of the alphabet) are not many, and yet make up and sustain the essences and forms of all substances—this, I say, it is which I am attempting, and which constitutes and defines that part of metaphysics of which we are now inquiring." Physics inquires into the same qualities, but does not push its investigations into ultimate reality or reach the more general causes. We thus at last attain a definite conclusion with regard to forms, and it appears clear that in Bacon's belief the true function of science was the search for a few fundamental physical qualities, highly abstract and general, the combinations of which give rise to the simple natures and complex phenomena around us. His general conception of the universe may therefore be called mechanical or statical; the cause of each phenomenon is supposed to be actually contained in the phenomenon itself, and by a sufficiently accurate process could be sifted out and brought to light. As soon as the causes are known man regains his power over nature, for "whosoever knows any form, knows also the utmost possibility of superinducing that nature upon every variety of matter, and so is less restrained and tied in operation either to the basis of the matter or to the condition of the efficient."⁷

Nature thus presented itself to Bacon's mind as a huge congeries of phenomena, the manifestations of some simple and primitive qualities, which were hid from us by the complexity of the things themselves. The world was a vast labyrinth, amid the windings of which we require some clue or thread whereby we may track our way to knowledge and thence to power. This thread, the *filum labyrinthi*, is the new method of induction. But, as has been frequently pointed out, the new method could not be applied until facts had been observed and collected. This is an indispensable preliminary. "Man, the servant and interpreter of nature, can do and understand so much, and so much only, as he has observed in fact or in thought of the course of nature; beyond this he neither knows anything nor can do anything." The proposition that our knowledge of nature necessarily begins with observation and experience, is common to Bacon and many contemporary reformers of science, but he laid peculiar stress upon it, and gave it a new meaning. What he really meant by observation was a competent natural history or collection of facts. "The firm foundations of a purer natural philosophy are laid in natural history."⁸ "First of all we must prepare a *natural and experimental history*, sufficient and good; and this is the foundation of all."⁹ The senses and the memory, which collect and store up facts, must be assisted; there must be a *ministration* of the senses and another of the memory. For not only are instances required, but these must be arranged in such a manner as not to distract or confuse the mind, *i. e.*, tables and arrangements of instances must be constructed. In the preliminary collection the greatest care must be taken that the mind be absolutely free from preconceived ideas; nature is only to be conquered by obedience; man must be merely receptive. "All depends on keeping the eye steadily fixed upon the facts of nature, and so receiving their images simply as they are; for God forbid that we should give out a dream of our own imagination for a pattern of the world; rather may He graciously grant to us to write an apocalypse or true vision of the footsteps of the Creator imprinted on his creatures."¹⁰ Concealed among the facts presented to sense are the causes or forms, and

⁷ Thus the last step in the theoretical analysis gives the first means for the practical operation. Cf. Aristotle, *Eth. Nic.*, iii. 3, 12, "τὸ ἐκχαρῶν ἐν τῇ ἀναλύσει πρῶτον εἶναι ἐν τῇ γενέσει." Cf. also *Nov. Org.*, i. 103.

⁸ *Cogitationes* (*Works*, iii. 187).

⁹ Pref. to *Instaur.* Cf. Valerius Term. (*Works*, iii. 224), and *N. O.*, i. 68, 124.

¹⁰ *N. O.*, ii. 10.

the problem therefore is so to analyse experience,¹ so to break it up into pieces, that we shall with certainty and mechanical ease arrive at a true conclusion. This process, which forms the essence of the new method, may in its entirety, as a ministration to the reason, be called a logic; but it differs widely from the ordinary or school logic in end, method, and form. Its aim is to acquire command over nature by knowledge, and to invent new arts, whereas the old logic strove only after dialectic victories and the discovery of new arguments. In method the difference is even more fundamental. Hitherto the mode of demonstration had been by the syllogism; but the syllogism is, in many respects, an incompetent weapon. It is compelled to accept its first principles on trust from the science in which it is employed; it cannot cope with the subtlety of nature; and it is radically vitiated by being founded on hastily and inaccurately abstracted notions of things. For a syllogism consists of propositions, propositions of words, and words are the symbols of notions. Now the first step in accurate progress from sense to reason, or true philosophy, is to frame a *bona notio* or accurate conception of the thing; but the received logic never does this. It flies off at once from experience and particulars to the highest and most general propositions, and from these descends, by the use of middle terms, to axioms of lower generality. Such a mode of procedure may be called *anticipatio nature* (for in it reason is allowed to prescribe to things), and is opposed to the true method, the *interpretatio nature*, in which reason follows and obeys nature, discovering her secrets by obedience and submission to rule. Lastly, the very form of induction that has been used by logicians in the collection of their instances is a weak and useless thing. It is a mere enumeration of a few known facts, makes no use of exclusions or rejections, concludes precariously, and is always liable to be overthrown by a negative instance.² In radical opposition to this method the Baconian induction begins by supplying helps and guides to the senses, whose unassisted information could not be relied on. Notions were formed carefully, and not till after a certain process of induction was completed.³ The formation of axioms was to be carried on by a gradually ascending scale. "Then and only then may we hope well of the sciences, when in a just scale of ascent and by successive steps, not interrupted or broken, we rise from particulars to lesser axioms; and then to middle axioms, one above the other; and last of all to the most general."⁴ Finally the very form of induction itself must be new. "The induction which is to be available for the discovery and demonstration of sciences and arts must analyse nature by proper rejections and exclusions; and then, after a sufficient number of negatives, come to a conclusion on the affirmative instances, which has not yet been done, or even attempted, save only by Plato.⁵ . . . And this induction must be used not only to

¹ Pref. to *Inst.*

² Bacon's summary is valuable. "In the whole of the process which leads from the senses and objects to axioms and conclusions, the demonstrations which we use are deceptive and incompetent. The process consists of four parts, and has as many faults. In the first place, the impressions of the sense itself are faulty, for the sense both fails us and deceives us. But its shortcomings are to be supplied and its deceptions to be corrected. Secondly, notions are all drawn from the impressions of the sense, and are indefinite and confused, whereas they should be definite and distinctly bounded. Thirdly, the induction is amiss which infers the principles of sciences by simple enumeration, and does not, as it ought, employ exclusions and solutions (or separations) of nature. Lastly, that method of discovery and proof according to which the most general principles are first established, and then intermediate axioms are tried and proved by them, is the parent of error and the cause of all science." (*N. O.*, i. 69.)

³ *N. O.*, i. 105.

⁴ *Ibid.*, i. 104; cf. i. 19-26.

⁵ This extract gives an answer to the objection sometimes raised that Bacon is not original in his theory of induction. He certainly admits

discover axioms, but also in the formation of notions."⁶ This view of the function of exclusion is closely connected with Bacon's doctrine of forms, and is in fact dependent upon that theory. But induction is neither the whole of the new method, nor is it applicable to forms only. There are two other grand objects of inquiry: the one, the transformation of concrete bodies; the other, the investigation of the latent powers and the latent schematism or configuration. With regard to the first, in ultimate result it depends upon the theory of forms; for whenever the compound body can be regarded as the sum of certain simple natures, then our knowledge of the forms of these natures gives us the power of superinducing a new nature on the concrete body. As regards the latent process which goes on in all cases of generation and continuous development or motion, we examine carefully, and by quantitative measurements, the gradual growth and change from the first elements to the completed thing. The same kind of investigation may be extended to many cases of natural motion, such as voluntary action or nutrition; and though inquiry is here directed towards concrete bodies, and does not therefore penetrate so deeply into reality as in research for forms, yet great results may be looked for with more confidence. It is to be regretted that Bacon did not complete this portion of his work, in which for the first time he approaches modern conceptions of change. The latent configuration or inward structure of the parts of a body must be known before we can hope to superinduce a new nature upon it. This can only be discovered by analysis, which will disclose the ultimate constituents (natural particles, not atoms) of bodies, and lead back the discussion to forms or simple natures, whereby alone can true light be thrown on these obscure questions. Thus, in all cases, scientific explanation depends upon knowledge of forms; all phenomena or secondary qualities are accounted for by being referred to the primary qualities of matter.

The several steps in the inductive investigation of the form of any nature flow readily from the definition of the form itself. For that is always and necessarily present when the nature is present, absent when it is absent, decreases and increases according as the nature decreases and increases. It is therefore requisite for the inquiry to have before us instances in which the nature is present. The list of these is called the table of *Essence and Presence*. Secondly, we must have instances in which the nature is absent; only as such cases might be infinite, attention should be limited to such of them as are most akin to the instances of presence.⁷ The list in this case is called table of *Absence in Proximity*. Thirdly, we must have a number of instances in which the nature is present in different degrees, either increasing or decreasing in the same subject, or variously present in different subjects. This is the table of *Degrees* or of *Comparison*. After the formation of these tables, we proceed to apply what is perhaps the most valuable part of the

that Plato has used a method somewhat akin to his own; but it has frequently been contended that his induction is nothing more than the *ἐπιγνώμη* of Aristotle (see Rémusat's *Bacon*, *loc. cit.*, pp. 310-315, and for a criticism, Waddington, *Essais de Logique*, p. 261, *seq.*) This seems a mistake. Bacon did not understand by induction the argument from particulars to a general proposition; he looked upon the exclusion and rejection, or upon *elimination*, as the essence of induction. To this process he was led by his doctrine of forms, of which it is the necessary consequence; it is the infallible result of his view of science and its problem, and is as original as that is. Whoever accepts Bacon's doctrine of cause must accept at the same time his theory of the way in which the cause may be sifted out from among the phenomena. It is evident that the Socratic search for the essence by an analysis of instances—an induction ending in a definition—has a strong resemblance to the Baconian inductive method.

⁶ *N. O.*, i. 105.

⁷ That is to say, differing in nothing save the absence of the nature under investigation.