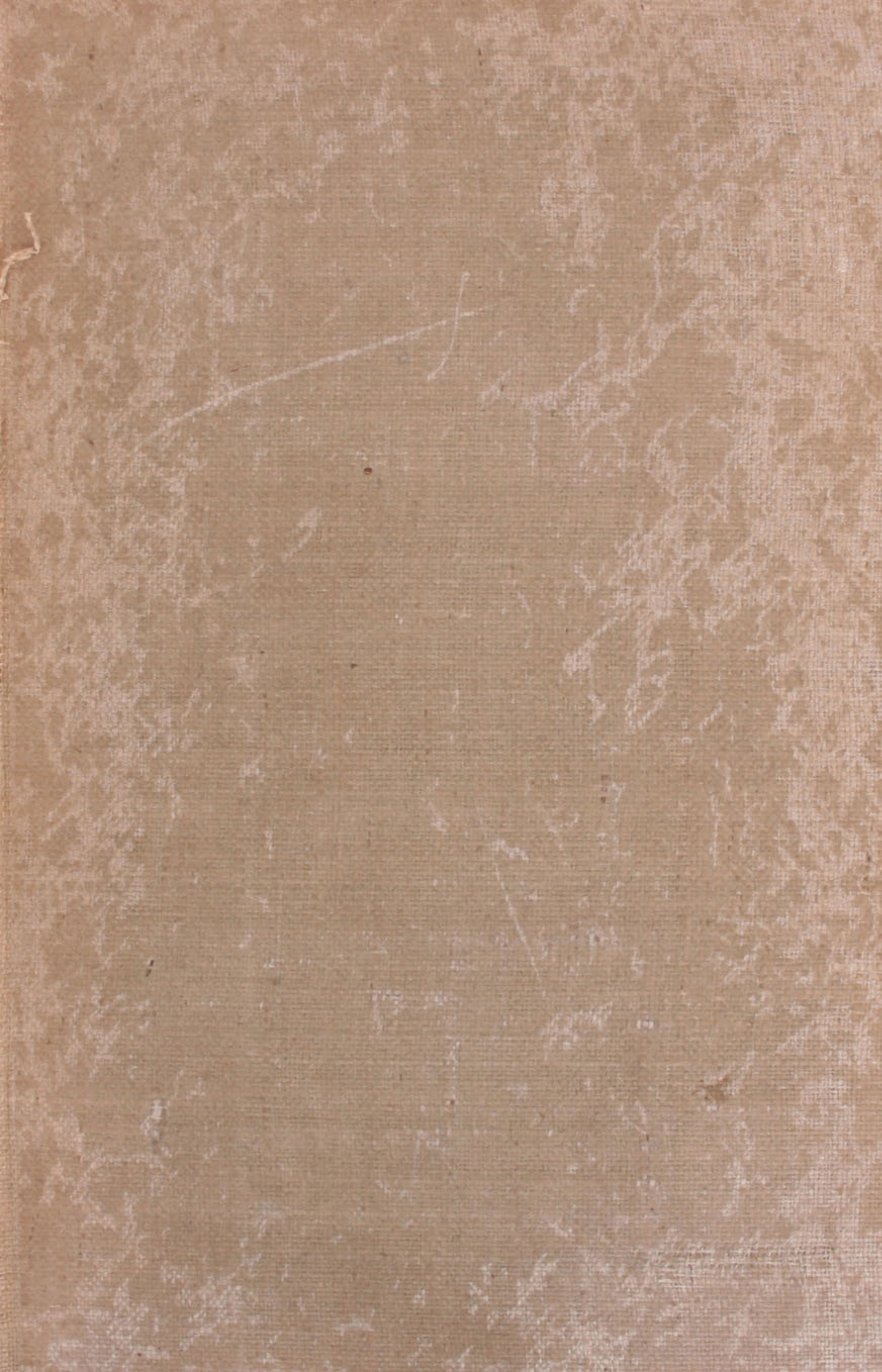

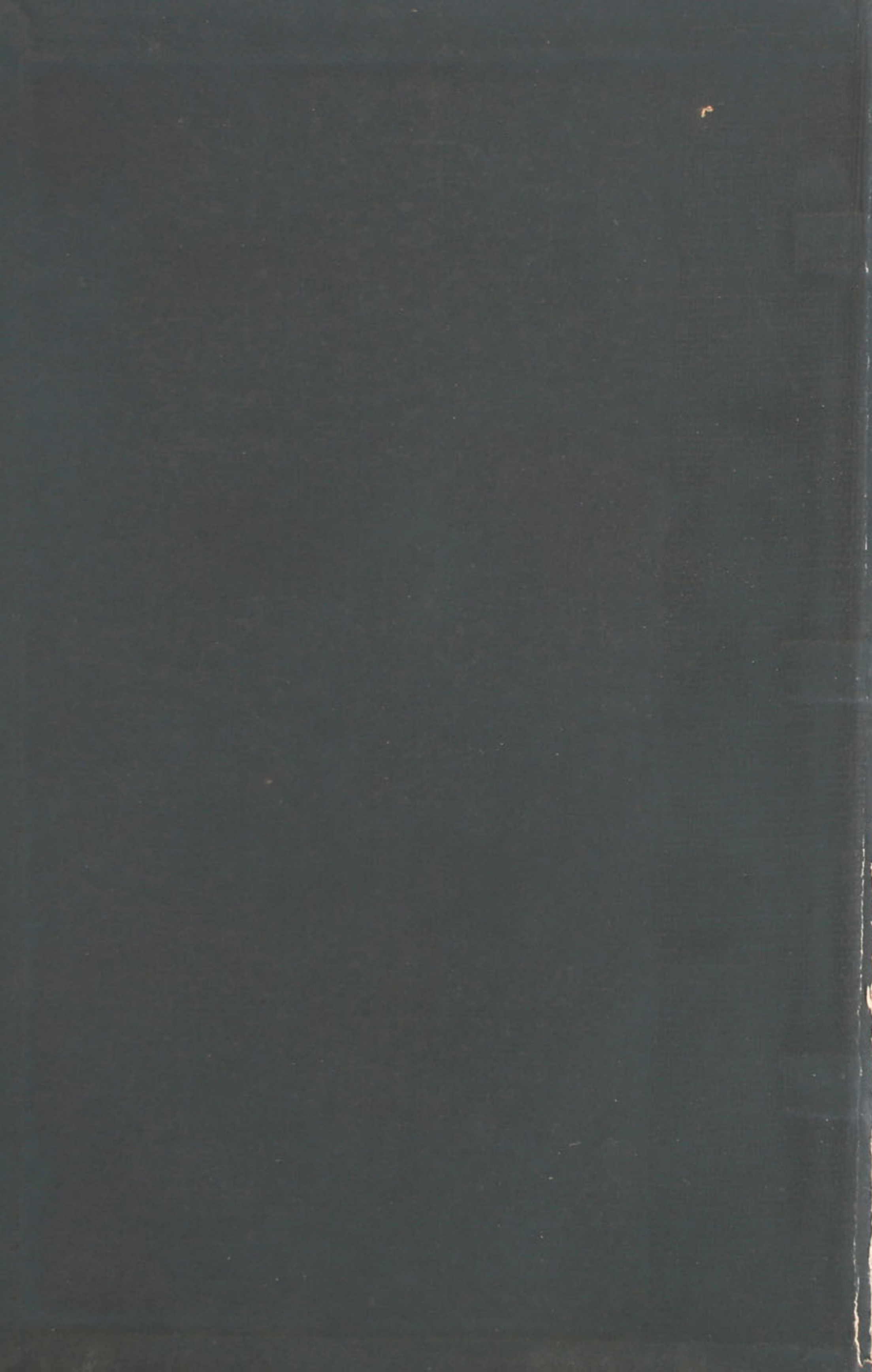

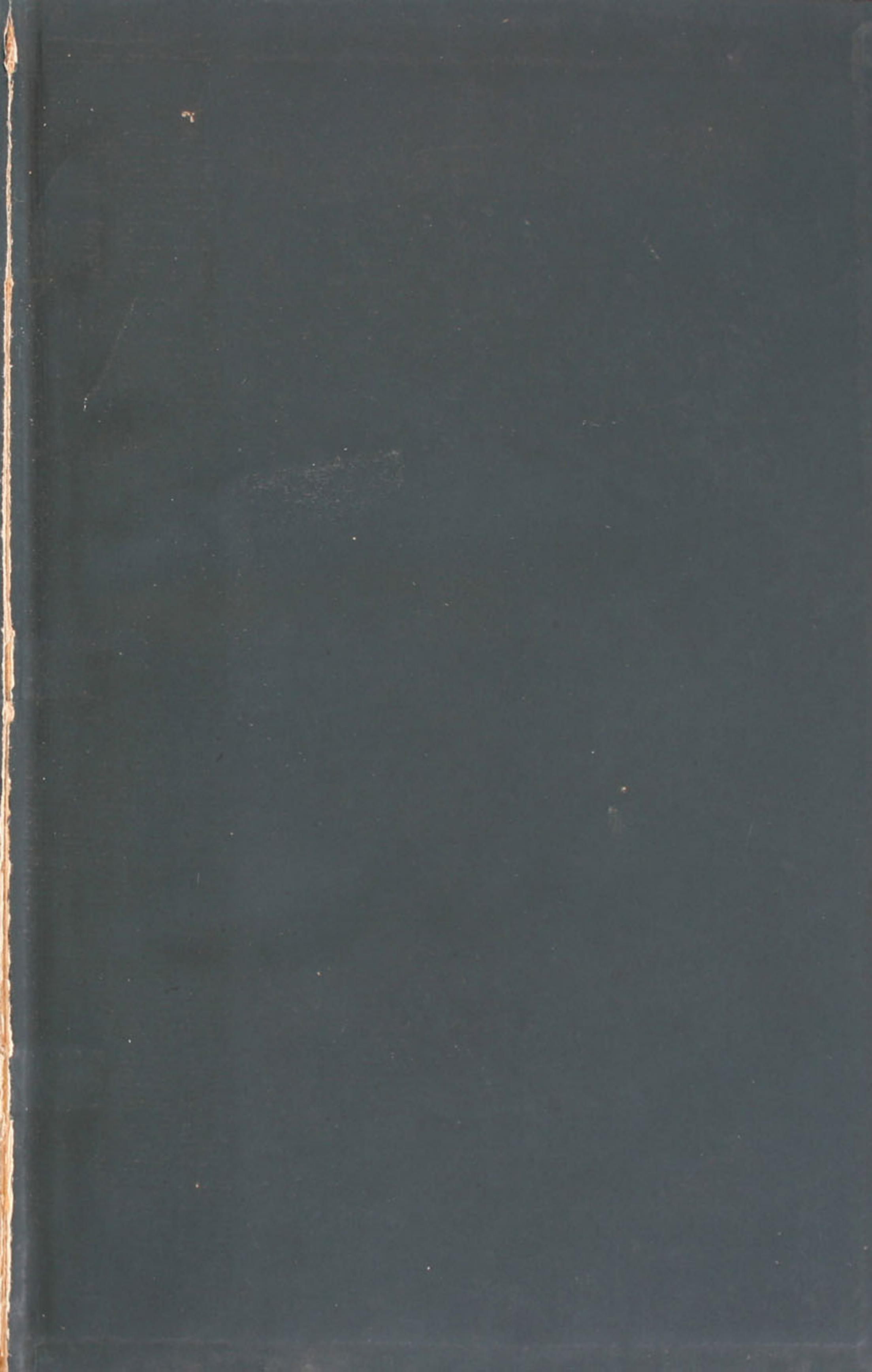

Fernando Pessoa

THE PHILOSOPHICAL WORKS OF FRANCIS BACON

THE PHILOSOPHICAL WORKS OF FRANCIS BACON

BARON OF VERULAM, VISCOUNT ST. ALBANS, AND LORD HIGH CHANCELLOR OF ENGLAND

REPRINTED FROM THE TEXTS AND TRANSLATIONS, WITH THE NOTES AND PREFACES, OF

ELLIS AND SPEDDING

EDITED WITH AN INTRODUCTION

By JOHN M. ROBERTSON

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EDITOR'S PREFACE

An adequate collection of the chief works of Francis Bacon, at a price within the reach of the mass of readers, has long been wanting, and the present reprint, from the magistral edition of Ellis and Spedding (7 vols., 1857), is an attempt to meet the need. It contains far more than has ever before been included in any popular collection, and is believed to give all of Bacon's philosophical writings that are likely to be read by any save a few special students. Such treatises as those collected in the fifth volume of the Ellis-Spedding edition under the title of *Natural and Experimental History*—the "Histories" of the Winds, of Life and Death, of Dense and Rare, and the rest—have now not only no scientific value, but almost no literary or philosophical interest, the subject matter being such as would give small scope to Bacon's style even had they been written in English, whereas, like so much of the more interesting matter in this volume, they were published in Latin. The *Sylva Sylvarum*, though in Bacon's English, is no less obsolete. Our collection, however, includes translations not only of the *Novum Organum* and the *De Augmentis Scientiarum*, but of the *Parasceve*, the *De Principiis atque Originibus*, the *Descriptio Globi Intellectualis*, the *Thema Coeli*, and the *De Sapientia Veterum*, as well as the original English treatises entitled *Valerius Terminus*, and *Filum Labyrinthi*—the latter a version by Bacon of his Latin *Cogitata et Visa*.

With the aid of the valuable prefaces by Messrs. Ellis and Spedding, which are in every case retained, the student can gather from this mass of matter a thorough knowledge of Bacon's work, in system and in detail, in its strength and its weakness.

Holding that Bacon's didactic works were to be reproduced as far as they had literary value, the editor has included not only the original *Advancement of Learning* and the classic *Essays* and *New Atlantis*, but the *Apophthegms*, though, like the *Wisdom of the Ancients*, they strain somewhat on the title of *Philosophical Works*. The *History of Henry VII* is omitted as being wholly outside that title, and as being easily accessible in cheap editions; and the legal works are omitted as appealing only to a few even among law students.

The large mass of Bacon's work here brought together is presented to the reader in the most accurate texts and the most accurate translations in existence—those of the complete edition of Ellis and Spedding. On the English texts of that edition Mr. Spedding lavished a care which can be partially appreciated from his notes in the following pages. The bulk of the translations, which were made originally by Mr. Francis Headlam, was thoroughly revised by Mr. Spedding, and part of that of the *Novum Organum* by Mr. Ellis also. The present editor will not venture to say that they are absolutely faultless; but after making a number of comparisons he is satisfied that they are quite the most trustworthy that have been published.

In addition to the boon of accurate versions, and the skilled guidance given in the sectional prefaces, the reader of the present edition has the help of the multitude of learned notes appended by Mr. Ellis to the Latin *Novum Organum* and *De Augmentis*, as well as those added by Mr. Spedding to these works, and his annotations and various readings to the English works. With the help of the latter, which note changes made in the translations as well as the variants of the earlier editions, Bacon's thought can be followed with critical closeness.

Mr. Ellis's notes, in so far as they were not philological, and applicable only to the originals, have been transferred to the corresponding passages in the

translations in this reprint. A small number of notes, some of them borrowed from other editions, have been added, always in brackets, by the present editor; but beyond adding a few instances to those singled out by Mr. Ellis, he has not attempted either to add to the specification of Bacon's mistakes in physics or to note the advances made in science since Mr. Ellis wrote. The *Novum Organum* and *De Augmentis* are now read not for scientific information, but as the exposition of a great writer's conception of the needs and the methods of the sciences, some three centuries ago.

As Mr. Spedding indicated in his first preface to the seven-volume edition, no chronological or other "order" of Bacon's works has ever been agreed upon, and that followed in the present volume is a compromise on his. After Rawley's "Life" and Mr. Ellis's General Preface, the original *Advancement of Learning*, in two books, is placed first, as the simplest and most attractive, as well as the earliest, of Bacon's fuller expositions of his aims; the pregnant fragments entitled *Valerius Terminus* and *Filum Labyrinthi* coming next. Then follow the translations of the *Novum Organum*, the *Parasceve*, of which the original appeared in the same volume with the *Organum* in 1620; the *De Augmentis Scientiarum*, which appeared in Latin in 1623 (reproducing Book I of the *Advancement*, expanding and modifying Book II, and adding seven books more); the *De Principiis*, which is also late; and the *Descriptio Globi Intellectualis* and *Thema Coeli*, which, though of earlier date (1612), are rather appendices than preparatives to the main scheme of the "Great Instauration". As to the projection and the imperfect fulfilment of that scheme, full information is given in Mr. Ellis' preface to the *Novum Organum*, Mr. Spedding's notes to that preface, and his own prefaces. The other works in the present collection are not placed in order of date, but merely grouped apart from the more strictly philosophical works, the *New Atlantis* coming first because of its relation to these.

In the somewhat anxious task of reading the proofs of this volume, as before in his edition of Buckle in the same series, the editor has had the invaluable assistance of Mr. Ernest Newman. He may therefore hope that this reprint from a standard edition is not less accurate than that—of which, indeed, he has been able to correct some typographical errors.

EDITOR'S INTRODUCTION

I

The manifold debate which has circled round the name of Bacon for over two hundred years, but especially in the past century, may be divided under two heads—that of his character, and that of his intellectual merit. For many students, happily, the first issue is settled, and the second is perhaps near settlement. But for the general reading public each problem is still somewhat confused by the influence of Macaulay's famous Essay, which seriously mishandled both.

Logically considered, the two questions are quite independent: that is to say, a decision on either leaves the other still open. But for any one in doubt on the first, it must be nearly impossible to read a page of Bacon (who so constantly passes moral judgments) without having the critical faculty either primed or puzzled by the reflection that this moralist is charged by a series of eminent writers with being as base in conduct as he was brilliant in thought and speech. Pope's line—

"The brightest, wisest, meanest of mankind"—

s still, it is to be feared, the common estimate, as it was in effect Macaulay's; and the real paradox of great powers in combination with low instincts is common enough in life to permit of Pope's extravagance—which asserts something quite different—passing as a statement of possible psychological fact.

It is best, then, to come straight to the historical facts. The main charges against Bacon as a man are two: treachery to his patron and benefactor, Essex; and corruptness as a judge; and Macaulay presses both with all his force. The argument on the first is that because Essex, for great services rendered him by Bacon, had given him a fairly adequate reward, Bacon's duty, when Essex had not only long ceased to take his counsel but had grossly contravened it, was to refuse to take any action against him as a crown lawyer. When it is remembered that Essex, on his part, had received from the Queen a hundred times the benefits he had bestowed on Bacon, and was thus, on the principles assumed, guilty past all apology, not only in his act of insane sedition but in his previous complots, the attack is seen to break down. Bacon, who held the normal view of his duty to the head of the State, acted on principles of public fealty which then as now were as clearly of plenary force as his obligation to Essex was limited. And his action in the prosecution was that of a man concerned to save an offender who, unwise to the verge of madness, would not let himself be saved. So much has been established for all open-minded readers by the admirable treatise of the late James Spedding, entitled *Evenings with a Reviewer*, a work unique in literature. In that patient and exhaustive discussion Macaulay's case is once for all destroyed; and with it the additional indictments framed by some later and closer investigators. The one fresh contention since set up on the hostile side—that Bacon counselled Essex to accept the Irish command, whereas Spedding declared he had often dissuaded him—also breaks down on scrutiny. The letter in which Bacon acquiesced is quite compatible with previous dissuasion, the tone being that of a lenient friend trying to make the best of an unalterable arrangement.

In regard to the charge of bribery, the case is different. Bacon did take some gifts from suitors; and therein he sinned against his own precepts for the management of judicial affairs. But in not a single case is there any reason to believe that he was corruptly swayed by the gift; and in taking presents from suitors

he conformed to the common judicial practice of his day, though he heedlessly took one or two of them at dates which brought him under suspicion, instead of in the annual or otherwise usual way of official routine. The folly of this heedlessness can hardly be exaggerated, inasmuch as it brought on him absolute ruin; and it can be explained only as it has been by Spedding, on the ground of his failure to check the scandalous profusion of his many underlings at home, which kept him in constant embarrassment. But his fault was laxity, never iniquity; and he could truly claim, while admitting the justice of the sentence passed on him by the House of Lords, that he had been the justest judge of his day. Not one of his thirty-six thousand decrees as Lord Chancellor appears to have been overturned on the score of corruption. And his one serious lapse from right conduct has a more profoundly pathetic aspect for us when we realize that, as Mr. Spedding puts the case in his preface to the *De Interpretatione Naturæ Procemium*, it was an indirect consequence of his devotion to his disinterested intellectual enterprise.

"He began by conceiving that a wiser method of studying nature would give man the key to all her secrets, and therewith the mastery of her powers. . . . But the work would be long and arduous, and the event remote; and in the meantime he was not to neglect the immediate and peculiar service which as an Englishman he owed to his country, and as a Protestant to his religion. He set out with the intention of doing what he could towards the discharge of all three obligations, and planned his course accordingly. With regard to the two last, however, he found as life wore away that the means and opportunities which he hoped for did not present themselves; and fearing that all would fail together if he lost more time in waiting for them, he resolved to fall back upon the first as an enterprise which depended for success on himself alone.

"So his case stood when [between forty and fifty] he drew up this paper. Afterwards, though new exigencies of state gave him an opening for service and drew him again into business and politics, he did not cease to devote his leisure to the prosecution of his main object; and as soon as his fall restored to him the entire command of his time, he again made it his sole occupation.

"So far, therefore, his actual course was quite consistent with his first design; and it is even probable that this very constancy was in some degree answerable for the great error and misfortune of his life. That an absorbing interest in one thing should induce negligence of others not less important, is an accident only too natural and familiar; and if he did not allow the *Novum Organum* to interfere with his attention to the causes which came before him in Chancery, it did probably prevent him from attending as carefully as he should, and otherwise would have done, to the proceedings of his servants and the state of his accounts."

II

If, finally, Bacon be judged in the only fair way, by comparison with his leading contemporaries, he is found to be in essentials a much better man than most of them. His successor in the Chancellorship, Bishop Williams, was convicted of real corruption, and disgraced accordingly. Another of his impeachers, Cranfield, was found guilty of gross and manifold embezzlement as Lord Treasurer, and disgraced likewise; and of most of those active against him it may be said that they were as much morally as intellectually his inferiors. No public man of that age of whose career we have any full knowledge makes after a close examination so strong an impression of general worthiness and fairness. "All that were great and good," says the unromantic Aubrey, "loved and honoured him". Spedding, generally held to be one of the most sagacious men of *his* age in England, has deliberately said of him, on the strength of a quite unrivalled knowledge of his whole career: "I doubt whether there was ever any man whose evidence upon matters of fact may be more absolutely trusted".

The only ground on which that judgment is now likely to be disputed is the occasional semblance of servility in Bacon's relations to King James and his favourites. But in truth it is only a semblance. Bacon in his youth, by the admission of his detractors, bore himself rather haughtily than otherwise to his social equals; and it was only under the discipline of life, after suffering from

slow advancement and the sense of wasted powers, that he learned something of the necessary arts of courts. Those who check Macaulay's essay by Spedding's commentary will realize how far he was at all times from self-prostration, despite his own resolve in later life to put a check on his acquired habit of compliment. All the testimony goes to show that the impression he made on most of his contemporaries was one of noble dignity and courtesy; and if he flattered the King in his books, the measure of that weakness is not to be taken without comparing his eulogies with those passed by the bishops in the dedication of their version of the Bible. Of the King, indeed, the King's favoured officer might reasonably be panegyrical. To him, on his accession, Bacon looked with eager hope for help in his scheme for the advancement of science, James being of all monarchs of that day indisputably the most learned; and even when that hope was visibly not to be fulfilled, he could say with truth: "As my good old mistress [Elizabeth] was wont to call me her watch-candle, because it pleased her to say I did continually burn (and yet she suffered me to waste almost to nothing), so I must much more owe the like duty to your Majesty, by whom my fortunes have been settled and raised". From any point of view, he owed immeasurably more to James than he ever did to Essex. And when his entire political career is read in the light of Spedding's consummate knowledge and intimate appreciation, it stands out no less fully redeemed than his personal character from the charges so zealously pressed by Macaulay. The accusation of cherishing monopolies and judicial torture, and the lawless use of the King's prerogative, all fall to the ground on full confrontation with the facts. It is safe to say that had Bacon's life ended in undimmed official lustre, and not in technical disgrace, he would pass without challenge as one of the most sagacious and most upright public men of his day.

He was not indeed morally original in any noteworthy degree. In his readiness to advocate unnecessary war, to the end of national aggrandisement, he falls below Burleigh, and even below James. But such perversion of ethical judgment by the spirit of statecraft has been nearly normal in all ages, and may be noted, in that of Bacon, in so esteemed a spirit as Coligny. In other regards he is at worst over-wary in precept, never unscrupulous. To infer from his inculcations of worldly wisdom in the *Essays* and elsewhere that he was abnormally crafty and self-seeking in his own life, is to misconceive his age in general and his environment in particular. Save for his one fatal lapse, his life comports worthily enough with his pretensions.

III

The case is somewhat otherwise, however, with Bacon's credit as a thinker. In his own day, amid a volume of praise not always authoritative, there was heard the note of not incompetent detraction, when Harvey, "though he esteemed him much for his wit and style," said of him that he wrote philosophy "like a Lord Chancellor". After two centuries in which that challenge was overborne by a chorus of admiration coming from men of science and men of letters alike, it has been revived and amplified with a zeal very different from that of Macaulay, who won the repute of impartiality by following up his expansion of the conventional censure with a reverberation of the conventional eulogy. That summing-up loosely credits "the Baconian philosophy" with having "performed the wonders of subsequent scientific progress", and the *Novum Organum* and *De Augmentis* with having "moved the intellects which have moved the world". It is true that Bacon has greatly impressed many great minds, beginning in his own century with Leibnitz, Comenius, and Vico; but it is also true that such great intellects as Descartes, Gassendi, and Newton, though they appreciated Bacon's work, did their own independently; while Galileo and Kepler and Gilbert, in Bacon's day, did theirs, which he did not assimilate, on the stimulus of Copernicus, whose vital doctrine he never accepted; and Harvey certainly owed him nothing. The problem must be disengaged from the rhetoric which obscures such facts.

No more searching and more judicial analysis of Bacon's scientific and

philosophic work has ever been made than that of Mr. R. L. Ellis, in the prefaces and notes reproduced in the following pages; and he, without any lack of sympathy, disallows all the more specific claims made for Bacon as a renovator and reformer of scientific thought. The special Baconian method, he observes, is "nearly useless". And Spedding, the most devoted and the most effectual champion that a libelled reputation ever had, acquiesces in that verdict. In his preface to the third part of his and Ellis' edition—containing those works of Bacon originally designed to be included in the *Instauratio Magna*, but superseded or abandoned—Spedding thus writes of their author's unfinished system:

"We no longer look for the discovery of any great treasure by following in that direction. His peculiar system of philosophy—that is to say, the peculiar method of investigation, the 'organum,' the 'formula,' the 'clavis,' the 'ars ipsa interpretandi naturam,' the 'filum Labyrinthi,' or by whichever of its many names we choose to call that artificial process by which alone he believed that man could attain a knowledge of the laws and a command over the powers of nature—of this philosophy we can make nothing. If we have not tried it, it is because we feel confident that it would not answer. We regard it as a curious piece of machinery, very subtle, elaborate, and ingenious, but not worth constructing, because all the work it could do may be done more easily another way."

It is true that Spedding in his preface to the *Parasceve* repeats, as a kind of forlorn hope, the argument first put by him in the *Evenings with a Reviewer*, that Bacon counted mainly on the sheer collection of data for the attainment of that command over Nature which he desired for men. But that plea too is implicity disallowed by Ellis, and must be disallowed by the critical reader now. Spedding's half-abandoned contention that Bacon would not have dropped his theoretical work to make a great collection of facts if he had not felt the latter to be the vitally important procedure, does not advance the case if it be granted. In point of fact, Bacon's reason for undertaking his collection of data was obvious enough. There was little use in his telling men that his method of inquiry would yield them an unparalleled harvest of truth, unless he showed them some sheaves won by it; and this he sought to do. Spedding admits that he failed, but urges that if only men did systematically and comprehensively what Bacon asked, they might ere this have attained immense results. The answer is that men have always been doing what Bacon urged, to the best of their ability; and their slow progress has been partly due to what made his own success so small—the essential and irremovable difficulty of discovering general truths or natural laws. As Spedding actually remarks, Kepler had had to his hand a great mass of observations; and yet he fumbled long and variously before he hit upon true theories. It is arguable that a still larger collection of facts might have shortened his task; but on the one hand this is very doubtful, and on the other hand the decisive answer is given by Ellis, that beyond a certain point men do not know how to look for facts save in the light of a new hypothesis.

Bacon was really on a truer track when he began by arguing for a better discipline in inference, and a rigorous revision of beliefs. Here, despite the final miscarriage of the method he schemed, which was to have worked as it were mechanically, enabling even ordinary minds to arrive at new and true scientific generalisations, there is perhaps more to be said for him than is in effect allowed either by Macaulay in his summing-up or by Ellis in his. Macaulay's is finally void, resolving itself into his characteristic bracketing of unresolved contradictions. On one page he declares that "if by wit be meant the power of perceiving analogies between things which appear to have nothing in common", the feats of Bacon's wit in the *Wisdom of the Ancients* and the second book of the *De Augmentis* "were not merely admirable, but portentous, almost shocking". "Indeed he possessed this faculty, or rather the faculty possessed him, to a morbid degree." On the next page we are told, of the same man, that "no imagination was ever at once so strong and so thoroughly subjugated. It never stirred but at a signal from good sense. It stopped at the first check from good sense." In the same fashion we are told on the one hand that Bacon "was the person who first turned the minds of speculative men, long occupied in verbal disputes, to the discovery of new and useful truth"; and on the other hand

that Bacon's inductive rules " though accurate, are not wanted, because in truth they only tell us to do what we are all doing". That is to say, Macaulay also holds that Bacon had achieved nothing in the matter of method, but claims that he first taught men what kind of truth was best worth seeking for. " He was the person who first called the public attention to an inexhaustible mine of wealth, which had been utterly neglected, and which was accessible by that road alone " [i.e. by the inductive method—the doing of what " we are all doing "]. " By doing so he caused that road, which had previously been trodden only by peasants and higglers, to be frequented by a higher class of travellers."

This claim in turn, which repeats Bacon's most sanguine estimate of his own performance, cannot stand for a moment. The kinds of truth which Bacon sought, were the kinds that many other men before and around him had sought for. The six names of Copernicus, Leonardo da Vinci, Kepler, Galileo, Gilbert, and Harvey, suffice to dispose of Macaulay's generalization. It was indeed one that so erudite a man could hardly have framed, little as he knew of the detail history of the sciences and the useful arts, had he not been bent on making out anyhow a case which should justify him in his endorsement of the conventional admiration for Bacon's works after he had endorsed the conventional blame of Bacon's life. Bacon was really deficient in his appreciation of what had been achieved by his predecessors in the way of " fruits " of right reasoning. From the prefaces of his colleague, Spedding has compiled a formidable list of the oversights and signs of ignorance in the various treatises. The would-be reformer of astronomy " appears to have been utterly ignorant of the discoveries which had just been made by Kepler's calculations. Though he complained in 1623 of the want of compendious methods for facilitating arithmetical computations, especially with regard to the doctrine of Series . . . he does not say a word about Napier's Logarithms, which had been printed only nine years before, and reprinted more than once in the interval. He complained that no considerable advance had been made in geometry beyond Euclid, without taking any notice of what had been done by Archimedes and Apollonius." Seeking to determine specific gravities, he shows ignorance of the better methods previously tried by Archimedes, Ghetaldus, and Porta. Discussing the backwardness of mechanics, he names neither any of these, nor Galileo, nor Stevinus, nor Guldinus. He discusses the rate of fall of weights in ignorance of Galileo's doctrine, published thirty years before, and makes inquiries concerning the lever without knowledge of the theory of it, which was well established in his day. Speaking of the poles of the earth as fixed, he shows inacquaintance with the then familiar fact of the precession of the equinoxes. There is no sign that he sought the acquaintance of able contemporary English astronomers like Harriot ; and though Harvey was court physician, and had been publicly discussing his theory for at least nine years before he published his great treatise (1628), Bacon gives no indication of having heard of it.

And on the side of the advances in mechanics and the useful arts he was equally ill-informed. Not only did he repel Copernicus, ignore Kepler, and disparage Gilbert where Gilbert was substantially right and he wrong—as on the nature and movement of the stellar bodies, and the existence of lightless globes—but, as Dean Kitchin has noted, he was denying progress even in the mechanical arts when fly-clocks, telescopes, and miscroscopes were being newly made around him. Macaulay speaks as if until Bacon's day thinking men had been merely marking time in metaphysics and theology, taking no thought of utilities. To a lamentable extent, certainly, time had been so wasted ; but throughout the sixteenth and in the early years of the seventeenth century, thousands had been toiling at physics, mechanics, astronomy, anatomy, physiology, botany, and medicine. By Macaulay's own showing, they must have been using the inductive method, because we all use it all the time. And as regards the kind of progress that Macaulay seems to regard as alone worth reckoning, that made in the applied sciences or the useful arts, much if not most of it since Bacon's day has been made by men who probably never read one of his treatises. The great inventions in spinning and weaving made in the eighteenth century, like the locomotive, were the work of practical men, who would

have been so had Bacon never written. The Marquis of Worcester's steam engine was probably an improvement on a previous contrivance described by Porta; and it has not been shown that he, or De Caus, or Papin, or Savery, or Newcomen, or Watt, was a Baconian student. And the economic circumstances which delayed till the eighteenth century the commercial exploitation of the idea were not to be overruled by the popularity of Bacon's works among the early members of the Royal Society. Macaulay's praise, in short, is wrong, as his blame was wrong.

How little could be done for men by a mere exhortation to look about them for facts in the fashion of the authorities of Solomon's House in the *New Atlantis*, may be realized after a glance through Sprat's *History of the Royal Society*. The narrative part of that extremely interesting work ends with an account of the Society's procedure in "gathering and dispersing Queries"; and the first questions tabulated (with the answers to them by Sir Philiberti Vernatti, Resident in Batavia) are these—

> "Q. 1. Whether diamonds and other precious stones grow again after three or four years, in the same places where they have been digged out?
>
> "Q. 2. Whether the quarries of stone in India, near Fetipoca, not far from Agra, may be cleft like logs, and sawn like planks.
>
> "Q. 3. Whether there be a hill in Sumatra which burneth continually, and a fountain which runneth pure balsam?
>
> "Q. 4. What river is there in Java Major that turns wood into stone?
>
> "Q. 5. Whether it be true that upon the coast of Achin in Sumatra the sea, though it be calm, groweth very high when no rain falls, but is smooth in rain, though it blows hard?"

There are many more of the same order, one of which, with the answer, may serve to round our extract—

> "Q. 8. What ground there may be for that relation, concerning Horns taking root and growing about Goa?
>
> "A. Inquiring about this, a Friend laught and told me it was a jeer put upon the Portugees."

It may be said that this was not the sort of questioning that Bacon counselled; but it was the sort natural to men undisciplined and unguided by scientific study. It is only fair to note that the answers are much more intelligent than the questions, and that in this way some enlightenment was being circuitously gathered; but it was not on these lines that the useful arts flourished, that Newton reached his conclusions, and that Franklin was led to his experiment and Galileo to his discoveries.

IV

We are on much sounder ground when we come to the finding of Mr. Ellis, that "It is neither to the technical part of his method nor to the details of his view of the nature and progress of science that his fame is justly owing. His merits are of another kind. They belong to the spirit rather than to the positive precepts of his philosophy." The last words, however, I would venture to modify, by way of bringing out the writer's real intention. It is rather the concrete conclusions and the alleged potentialities of the method of investigation in Bacon that have to be disallowed: the precepts, in the proper sense of that term, are for the most part admirable; and it is in the unique force and insight with which he urged them that the real triumph of Bacon lies. Without fully compassing any important new truths, and without recognizing many of those reached by other men, he yet saw and stated, with a vividness never surpassed, the intellectual vices which incapacitated most men for either discovering or appreciating truth. To Bacon belonged in the very highest degree two faculties—that of utterance or statement, and that of insight into human character. He has truly written of himself, addressing the King in the *De Augmentis* (below, p. 606), that he was "a man naturally fitted rather for literature than for any-

thing else, and borne by some destiny against the inclination of his genius into active life". In rightly recognizing the predominance of his literary gift, he has implicitly undervalued his gift for public life, which was only less great, his moral sagacity being so keen that only his chronic failure to reck his own rede —the disparity between his insight and his force of will—put him at any disadvantage as a man of action. And it is in virtue of his combination of the gifts of speech and of moral insight that he is so memorable and so convincing in his demonstration of the *why* of most men's failure to think rightly. It is between his commanding and irrefutable censure of the vices of normal mental habit, and his thrilling prediction of the great things to be done when those vices are amended, that he holds still the admiration which he had conquered within a generation of his death.

The question of Bacon's "influence" has been somewhat obscured by the inference of some of his later censors that writings so far from reaching right scientific results can never have helped men to be scientific. But long before Macaulay wrote, the fact of the influence had been established by the research of Macvey Napier, published in the *Edinburgh Philosophical Transactions* for 1818. The many proofs there given of the delighted stir set up by Bacon in the English and European mind during the greater part of the seventeenth century have been supplemented somewhat in Thomas Martin's *Character of Lord Bacon* (1835), and in Professor Fowler's praiseworthy edition of the *Novum Organum*; and the general fact cannot be gainsaid. What had happened was not the sudden calling of all hands to the work of useful invention, as imagined by Macaulay, but the pervading thrill of a new critical perception and a new hope. And that impact was not the less momentous because it was felt by many men who did no scientific work. It can hardly be better realized than in a perusal of Sprat's *History of the Royal Society* (1667), unless it be in Cowley's impressive though precariously poetic Ode, prefixed to that work. The Ode is substantially a celebration of Bacon, of whom it sings that

"Autority, which did a Body boast,
Though 'twas but Air condens'd, and stalked about
Like some old Giant's more Gigantic Ghost
To terrifie the Learned Rout,
With the plain Magique of tru Reason's Light
He chac'd out of our sight;
Nor suffered living Men to be misled
By the vain Shadows of the Dead."

No doubt some of Bacon's errors passed muster for truths with pupils of this temper, beginning to swear by the new master who had adjured them so persuasively not to swear by any. But there is no mistaking the sense of liberation, the instinct of new destinies, which pulsates in that generation at Bacon's touch, not only among Englishmen, but among continentals such as Comenius and Leibnitz, and later in Vico. Cowley becomes positively inspired by it:

"Bacon, like Moses, led us forth at last;
The barren Wilderness he past;
Did on the very Border stand
Of the blest promised Land;
And from the Mountain Top of his Exalted Wit,
Saw it himself, and shew'd us it."

And with all his adoration, Cowley takes note, in duly descending diction, of an allowance that is reasonably to be made for the main circumstances of Bacon's life; going on to sigh—

"But Life did never to one Man allow
Time to Discover Worlds, and Conquer too;
Nor can so short a Line sufficient be
To fadome the vast depths of Nature's Sea:

> The work he did we ought t' admire,
> And were unjust if we should more require
> From his few years, divided 'twixt th' Excess
> Of low Affliction and high Happiness:
> For who on things remote can fix his sight,
> That's always in a Triumph, or a Fight?"

The last question is worth remembering. Spedding, despite his devotion, is fain to explain Bacon's practical failure in science as being due to a lack of "the faculty of distinguishing differences". While disposed to qualify some of Spedding's approbations, I hesitate to assent to this criticism; and venture to suggest that a sounder explanation is conveyed by Cowley. Bacon missed success in detail because he was striving to compass nearly the whole field of Nature in a life which was engrossed with work enough of other kinds to keep a strong man busy. No gift of distinguishing differences in things natural could have availed for success under such circumstances. The gift must be allowed, by implication, to Descartes and Galileo, who both made great scientific discoveries, the former in a life of peculiar seclusion, the latter in periods of partial relief from less drudgery than Bacon's. And yet both Descartes and Galileo made notable scientific blunders; the former, in particular, reasoning often in as arbitrary a fashion as Bacon ever did. The enormous range of mere observation shown by Bacon—a range seldom noted, either by friends or foes—is hardly compatible with a positive lack of faculty for discrimination. Rather we are led by the history of scientific discovery to think that new truth is reached in a way ultimately obscure, by the long absorption of a competent mind in a certain subject matter, the recognition of a new meaning coming at last suddenly, rather than by any quasi-mechanical process of reasoning.

Now, Bacon never could have been long enough absorbed in any one problem to attain to this kind of consummation. His field of speculation was too vast to be anywhere minutely and intensely explored. The sheer amount of mental power expended by him is marvellous; but with his fixed determination to find Nature finite, his ardent ambition to make the entire circuit, he never roots himself, never grows tranced in clairvoyant insight. At times, indeed, as in his discussion of the inconceivability of the atom—which extorted from Leibnitz a glowing eulogy at the expense of Descartes, and which in a manner anticipates the latest scientific speculation—he shows original force which challenges us to reconsider all our detractions; but the fact remains that, miscalculating the scope of his problem to begin with, he aimed at the impossible. With splendid powers, he undertook what no powers could achieve; and he did it in the random leisures of a responsible official career. What such powers might have done had they been concentrated for long periods on separate problems, is a question not to be lightly answered. In any case it must be reckoned one of the supreme flights of human perversity to surmise that the man so immeasurably preoccupied with the two orbs of natural and civil lore actually wrought, in addition to what he vainly sought to do, the stupendous imaginative performance of Shakspere.

V

We come back to the recognition of Bacon's enduring success—his magistral indictment of what can best be described as intellectual barbarism—the dogged adhesion to superstitious tradition, the wayward subjection of facts to feelings, the obstinate refusal to part with a predilection, the puerile imposition of a fanciful order on the face of things, the feudal partisanship towards the dicta of authority—all the stiff-necked and self-complacent follies arraigned under the classic nomenclature of Idols of the Cave, the Tribe, the Theatre, and the Forum. Some day that arraignment may be out of date; but the time is not yet. Its force, as put finally in the first book of the *Novum Organum*, is in no way lessened by the fact that Bacon a hundred times flatly transgressed his own precepts. Protesting against the self-will of those who would make their anthropomorphic guess the measure of Nature, he again and again does the

thing he denounces, even as Aristotle did before him. After scolding Aristotle, in season and out, for his sins in that sort, the English moralist with perfect simplicity proceeds to solve the problem of sidereal motion by the principle, among others, that there *ought* to be rest in Nature. Hence a grievous sequence of miscarriages. But in the intellectual as in the social life it is happily possible for men to show the way they do not tread. It is with the ethic of opinion as with the Golden Rule of reciprocity, which has been current for ten millenniums, and dubbed divine through two of them, and is yet daily trodden under foot by millions who profess to revere it. And when we note the failure of Bacon's undertaking to frame an automatic organon or mechanical induction of truth, we shall miss half the significance of the matter if we do not realise that the very aspiration was possible only to a great intelligence and a great personality. Till the time of Comte, his was the only current classification of the sciences.

In Bacon's day, every important new idea was arrested in the name of dogma, and as nearly strangled as was possible to those in authority. He himself, in the very books in which he is driven to protest against the procedure, gives it his countenance in the concrete as often as he censures it in the abstract. He could not realise the full truth of his own diagnosis, and he blessed tradition with the left hand, while banning it with the right. Those who have come after him have done the same, even unto the tenth generation. Untaught by the unvarying record of quashed vetoes, exploded rebuttals, and outlived dooms, the majority of men, having accepted all innovations but the last, proceed to treat that exactly as their fathers treated the earlier. Perhaps in our day, at least in the physical sciences, there has emerged a new intellectual self-consciousness, the result of the unceasing percussion of novelty; but to the moral and historical sciences we stand very much as Bacon's generation did to the physical. Hence the enduring significance of what is best in his message and finest in his phrase.. When all is said, we are listening to a man of genius, one of the great masters of English prose, and so great a master of the essentials of all diction that his Latin was to foreigners almost what his English was and is to his countrymen.

The late Professor Bain was not a man likely to be caught by mere rhetoric, or to be lightly enthusiastic about anything; and he could find no word save "wonderful" to express his sense of the sustained power and splendour of the first book of the *Novum Organum*. There Bacon put forth all his power of gnomic concentration and august style; and the result would to-day have been still nobler had he left us his own English. Of how it might have gone, the English reader may get some idea from the earlier English *Filum Labyrinthi*, which approximates to it in purpose.

The resort to Latin was part of the strategy by which he strove to counter-balance his own bias to over-confidence, now partly plain to himself. In youth he had begun with a Latin tractate headed *The Greatest Birth of Time*, the said birth being his proposed reform of investigation; but the walls of Jericho had not fallen before his trumpeting; and ere long he had silently altered the *Maximus* of his title to *Masculus*. Even after that, he had deliberately tried the experiment, in the second chapter of the *Temporis Partus Masculus*, of a style of scorn ful invective, to find whether haply he might win adherents by hectoring where persuasion had failed. Of that experiment in turn he had duly repented; and for his later works he took nearly every precaution that his ripened worldly wisdom could suggest, short of withdrawing his radical charges against men's average intellectual procedure. Finally, in his *De Augmentis Scientiarum*, published after his fall, he not only recast in Latin his earlier English work, but prudently softened or expunged every allusion to Catholicism that might offend the more liberal Catholics of the Continent, to whom, among others, he began to look for the hearing that he feared his own countrymen, daily more absorbed in theological disputes, might for ever deny him. At the same time to guard himself after his keen thrusts in the *Novum Organum* at theological hindrances to the sciences, he emphasised in the *De Augmentis* his authoritarian theology, which, after all, did not avail to prevent severe imputations on his orthodoxy.

Once again he had miscalculated, by reason of the very over-hopefulness which was at the core of his character, and which gave him so much of his energy. No mere tactic of propitiation could countervail the force of the prejudices against which his work was a protest. If his way of working were so new as he claimed, it followed that it would be slow of adoption. If men could be at once docile to his appeal, his polemic against their intellectual vices would have been proved false. It happened to be true; and they treated his work, on the whole, as he ought to have expected. Foreigners were naturally less unready than his countrymen to listen to a disgraced judge who took a high tone of censure towards the average mind; and his compliments to the Jesuits naturally softened them. Meanwhile, however, as Bacon had with signal prescience predicted in his *De Interpretatione Naturæ Proœmium*, English civil troubles drifted into civil war; and it was at the close of the struggle that, in the new order of things, his teaching began to have the "stupendous" success ascribed to it by Oldenburg, the Secretary of the Royal Society, in the preface to the collected Philosophical Transactions for 1672–77. As Sprat recognizes, the convulsion of the civil war had broken down many old walls and stirred many stagnant waters. Even during the progress of the strife, every species of discussion was quickened and deepened; and under the new regimen of the Restoration, in which Dutch practice and French ideas were thrust upon English usage, especially when London was burnt down and had to be rebuilt, Bacon's better day began, in such sort that scolding old Dr. Henry Stubbe, one of the last of the out-and-out Aristotelians in England, designated the experimental philosophers of his day a "Bacon-faced generation".

In later times the debate has turned as we have seen; but down to our own day Bacon's fame is relatively undiminished, having survived even the attempt of some of his worshippers to prove that he wrote the plays of Shakspere, and a whole library besides. And it is perhaps to-day that he can be best appreciated, seeing that our day knows more fully than any other how true are his charges against men's way of living their mental life—nay, how true they are against himself—and how fundamentally right was his prediction that men's power over Nature would be increased a thousand-fold when they learned to interpret her with the humility of truthseekers, casting aside all prepossessions. That much of the purification of spirit of modern science is due to Bacon will hardly be denied by any one who will make a "Baconian" induction from the records, instead of arguing *a priori*, with Carlyle and Liebig and Lange, that a pioneer who himself went so far astray cannot have helped or stirred men to do otherwise. As Columbus found the New World in seeking for the Asiatic Indies, and while believing he had actually found them, so Bacon, by his teaching, "builded better than he knew". Like Columbus, he was the hero of an Idea; and like so many heroes of fabulous quests, he bore a magic sword, to wit, his unrivalled power of speech. Hence, of all those who in or before his time warred by precept against the tyranny of tradition, he alone retains his spell. Ramus was slain by fanaticism; but even his martyr's death has not moved posterity to cherish his works. Telesius, being dull, is simply buried under the dust of time. Only Descartes, with his masterly *Discours de la Méthode*, written in *his* mother tongue for the next generation, compares with Bacon in his sustained hold upon posterity. And when we are making so many comparisons, it is meet to remember that Descartes in his turn, with all his scientific faculty, showed constant disrespect to the great Galileo, perhaps for a worse reason than that of Bacon's attitude to Copernicus, namely, a mere concern to propitiate the Catholic Church. However that may be, the spectacle of the strength and weakness, the successes and failures, of two such men recalls us to the true and final attitude of retrospective criticism, a recognisant compassion before the mysterious self-frustration of men.

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THE LIFE OF THE HONOURABLE AUTHOR [1]

[BY DR. W. RAWLEY, BACON'S "FIRST AND LAST CHAPLAIN"]

FRANCIS BACON, the glory of his age and nation, the adorner and ornament of learning, was born in York House, or York Place, in the Strand, on the two and twentieth day of January, in the year of our Lord 1560. His father was that famous counsellor to Queen Elizabeth, the second prop of the kingdom in his time, Sir Nicholas Bacon, knight, lord-keeper of the great seal of England; a lord of known prudence, sufficiency, moderation, and integrity. His mother was Anne, one of the daughters of Sir Anthony Cook; unto whom the erudition of King Edward the Sixth had been committed; a choice lady, and eminent for piety, virtue, and learning; being exquisitely skilled, for a woman, in the Greek and Latin tongues. These being the parents, you may easily imagine what the issue was like to be; having had whatsoever nature or breeding could put into him.

His first and childish years were not without some mark of eminency; at which time he was endued with that pregnancy and towardness of wit, as they were presages of that deep and universal apprehension which was manifest in him afterward; and caused him to be taken notice of by several persons of worth and place, and especially by the queen; who (as I have been informed) delighted much then to confer with him, and to prove him with questions; unto whom he delivered himself with that gravity and maturity above his years, that Her Majesty would often term him, *The young Lord-keeper*. Being asked by the queen *how old he was*, he answered with much discretion, being then but a boy, *That he was two years younger than Her Majesty's happy reign*; with which answer the queen was much taken [2].

At the ordinary years of ripeness for the university, or rather something earlier, he was sent by his father to Trinity College, in Cambridge [3], to be educated and bred under the tuition of Doctor John White-gift, then master of the college,

[1] This Life was first published in 1657, as an introduction to the volume entitled "Resuscitatio; or bringing into public light several pieces of the works, civil, historical, philosophical, and theological, hitherto sleeping, of the Right Honourable Francis Bacon, Baron of Verulam, Viscount St. Alban; according to the best corrected copies". Of this volume a second edition, or rather a re-issue with fresh titlepage and dedication, and several sheets of new matter inserted, appeared in 1661; the "Life of the Honourable Author" being prefixed as before, and not altered otherwise than by the introduction of three new sentences; to make room for which two leaves were cancelled.

[Mr. Spedding has "modernized the spelling; altered at discretion the typographical arrangement as to capitals, italics, and punctuation," and added the notes.]

[2] This last sentence was added in the edition of 1661. The substance of it had appeared before in the Latin Life prefixed to the *Opuscula Philosophica* in 1658, which is only a free translation of this, with a few corrections.

[3] He began to reside in April 1573; was absent from the latter end of August 1574 till the beginning of March, while the plague raged; and left the university finally at Christmas 1575, being then on the point of sixteen. See Whitgift's accounts, printed in the *British Magazine*, vol. xxxii. p. 365, and xxxiii. p. 444.

afterwards the renowned Archbishop of Canterbury; a prelate of the first magnitude for sanctity, learning, patience, and humility; under whom he was observed to have been more than an ordinary proficient in the several arts and sciences. Whilst he was commorant in the university, about sixteen years of age (as his lordship hath been pleased to impart unto myself), he first fell into the dislike of the philosophy of Aristotle; not for the worthlessness of the author, to whom he would ever ascribe all high attributes, but for the unfruitfulness of the way; being a philosophy (as his lordship used to say) only strong for disputations and contentions, but barren of the production of works for the benefit of the life of man; in which mind he continued to his dying day.

After he had passed the circle of the liberal arts, his father thought fit to frame and mould him for the arts of state; and for that end sent him over into France with Sir Amyas Paulet then employed ambassador lieger into France [4]; by whom he was after awhile held fit to be entrusted with some message or advertisement to the queen; which having performed with great approbation, he returned back into France again, with intention to continue for some years there. In his absence in France his father, the lord-keeper, died [5], having collected (as I have heard of knowing persons) a considerable sum of money, which he had separated, with intention to have made a competent purchase of land for the livelihood of this his youngest son (who alone was unprovided for; and though he was the youngest in years, yet he was not the lowest in his father's affection); but the said purchase being unaccomplished at his father's death, there came no greater share to him than his single part and portion of the money dividable amongst five brethren; by which means he lived in some straits and necessities in his younger years. For as for that pleasant site and manor of Gorhambury, he came not to it till many years after, by the death of his dearest brother, Mr. Anthony Bacon [6], a gentleman equal to him in height of wit, though inferior to him in the endowments of learning and knowledge; unto whom he was most nearly conjoined in affection, they two being the sole male issue of a second *venter*.

Being returned from travel, he applied himself to the study of the common law, which he took upon him to be his profession [7]; in which he obtained to great excellency, though he made that (as himself said) but as an accessary, and not his principal study. He wrote several tractates upon that subject; wherein, though some great masters of the law did out go him in bulk, and particularities of cases, yet in the science of the grounds and mysteries of the law he was exceeded by none. In this way he was after awhile sworn of the queen's council learned, extraordinary; a grace (if I err not) scarce known before [8]. He seated himself, for the commodity of his studies and practice, amongst the Honourable Society of Gray's-Inn, of which house he was a member; where he erected that

[4] Sir Amyas landed at Calais on the 25th of September 1576, and succeeded Dr. Dale as ambassador in France in the following February. See *Burghley's Diary*, Murdin, pp. 778, 779.

[5] In February 1578–9.

[6] Anthony Bacon died in the spring of 1601. See a letter from Mr. John Chamberlain to Sir Dudley Carlton, in the State Paper Office, dated 27th May, 1601.

[7] He had been admitted *de societate magistrorum* of Gray's Inn on June 27, 1576; commenced his regular career as a student in 1579; became "utter barrister" on the 27th of June 1582; bencher in 1586; reader in 1588; and double reader in 1600. See Harl. MSS. 1912, and Book of Orders, p. 56.

[8] In the Latin version of this memoir, for "after a while" Rawley substitutes *nondum tyrocinium in lege egressus*, by which he seems to assign a very early period as the date of this appointment. But I suspect he was mistaken, both as to the date and the nature of it. The title he got no doubt from a letter addressed by Bacon to King James, about the end of January 1620–1. "You found me of the Learned Council, Extraordinary, without patent or fee, a kind of *individuum vagum*. You established me and brought me into Ordinary." Coupling this probably with an early but undated letter to Burghley, in which Bacon thanks the queen for "appropriating him to her service", he imagined that the thanks were for the appointment in question. This however is incredible. A copy of this letter in the Landsdowne Collection gives the date,—18 October 1580; at which time Bacon had not been even a student of law for more than a year and a half,

elegant pile or structure commonly known by the name of *The Lord Bacon's Lodgings*, which he inhabited by turns the most part of his life, (some few years only excepted) unto his dying day. In which house he carried himself with such sweetness, comity, and generosity, that he was much revered and beloved by the readers and gentlemen of the house.

Notwithstanding that he professed the law for his livelihood and subsistence, yet his heart and affection was more carried after the affairs and places of estate; for which, if the majesty royal then had been pleased, he was most fit. In his younger years he studied the service and fortunes (as they call them) of that noble but unfortunate earl, the Earl of Essex; unto whom he was, in a sort, a private and free counsellor, and gave him safe and honourable advice, till in the end the earl inclined too much to the violent and precipitate counsel of others his adherents and followers; which was his fate and ruin [9].

His birth and other capacities qualified him above others of his profession to have ordinary accesses at court, and to come frequently into the queen's eye, who would often grace him with private and free communication, not only about matters of his profession or business in law, but also about the arduous affairs of estate; from whom she received from time to time great satisfaction. Nevertheless, though she cheered him much with the bounty of her countenance, yet she never cheered him with the bounty of her hand; having never conferred upon him any ordinary place or means of honour or profit, save only one dry reversion of the Register's Office in the Star Chamber, worth about £1,600 *per annum*, for which he waited in expectation either fully or near twenty years [10]; of which his lordship would say in Queen Elizabeth's time, *That it was like another man's ground buttalling upon his house, which might mend his prospect, but it did not fill his barn*; (nevertheless, in the time of King James it fell unto him); which might be imputed, not so much to Her Majesty's averseness and disaffection

and could not therefore have been qualified for such a place; still less could such a distinction have been conferred upon him without being much talked of at the time and continually referred to afterwards. Moreover, we have another letter of Bacon's to King James, written in 1606, in which he speaks of his "*nine* years' service of the crown". This would give 1597 as the year in which he began to serve as one of the learned council; at which time it was no extraordinary favour, seeing that he had been recommended for solicitor-general three or four years before, both by Burghley and Egerton. It appears however to have been no regular or formal appointment. He was not sworn. He had no patent; not even a written warrant. His tenure was only *ratione verbi regii Elizabethæ* (see Rymer, A.D. 1604, p. 121). Elizabeth, who "looked that her word should be a warrant", chose to employ him in the business which belonged properly to her learned council, and he was employed accordingly. His first service of that nature,—the first at least of which I find any record,—was in 1594. In 1597 he had come to be employed regularly, and so continued till the end of the reign, and was familiarly spoken of as "Mr. Bacon of the learned council".

[9] The connexion between Bacon and Essex appears to have commenced about the year 1590 or 1591, and furnishes matter for a long story—too long to be discussed in a note. His conduct was much misunderstood at the time by persons who had no means of knowing the truth, and has been much misrepresented since by writers who cannot plead that excuse. The case is not however one in which a unanimous verdict can be expected. Always where choice has to be made between fidelity to the state and fidelity to a party or person, popular sympathy will run in favour of the man who chooses the narrower duty; for the narrower duty is not only easier to comprehend, but, being seen closer, *appears* the larger of the two. But though sentiments will continue to be divided, facts may be agreed upon; and for the correction of all errors in matter of fact, I must refer to the Occasional Works, where the whole story will necessarily come out in full detail. In the mean time I may say for myself that I have no fault to find with Bacon for any part of his conduct towards Essex, and I think many people will agree with me when they see the case fairly stated.

[10] The reversion, for which he considered himself indebted to Burghley, was granted to him in October 1589. He succeeded to the office in July 1608. In the Latin version Rawley adds that he administered it by deputy.

towards him, as to the arts and policy of a great statesman then, who laboured by all industrious and secret means to suppress and keep him down; lest, if he had risen, he might have obscured his glory [11].

But though he stood long at a stay in the days of his mistress Queen Elizabeth, yet after the change, and coming in of his new master King James, he made a great progress; by whom he was much comforted in places of trust, honour, and revenue. I have seen a letter of his lordship's to King James, wherein he makes acknowledgement, *That he was that master to him, that had raised and advanced him nine times; thrice in dignity, and six times in office.* His offices (as I conceive) were Counsel Learned Extraordinary [12] to His Majesty, as he had been to Queen Elizabeth; King's Solicitor-General; His Majesty's Attorney-General; Counsellor of Estate, being yet but Attorney; Lord-Keeper of the Great Seal of England; lastly, Lord Chancellor; which two last places, though they be the same in authority and power, yet they differ in patent, height, and favour of the prince; since whose time none of his successors, until this present honourable lord [13], did ever bear the title of Lord Chancellor. His dignities were first Knight, then Baron of Verulam; lastly, Viscount St. Alban; besides other good gifts and bounties of the hand which His Majesty gave him, both out of the Broad Seal and out of the Alienation Office [14], to the value in both of eighteen hundred pounds per annum; which, with his manor of Gorhambury, and other lands and possessions near thereunto adjoining, amounting to a third part more, he retained to his dying day.

Towards his rising years, not before, he entered into a married estate, and took to wife Alice, one of the daughters and coheirs of Benedict Barnham, Esquire and Alderman of London; with whom he received a sufficiently ample and liberal portion in marriage [15]. Children he had none; which, though they be the means to perpetuate our names after our deaths, yet he had other issues to perpetuate his name, the issues of his brain; in which he was ever happy and admired as Jupiter was in the production of Pallas. Neither did the want of children detract from his good usage of his consort during the intermarriage, whom he prosecuted with much conjugal love and respect, with many rich gifts and endowments, besides a robe of honour which he invested her withal; which she wore unto her dying day, being twenty years and more after his death [16].

The last five years of his life, being withdrawn from civil affairs [17] and from an

[11] The person here alluded to is probably his cousin Robert Cecil, who, though he always professed an anxiety to serve him, was supposed (apparently not without reason) to have thrown obstacles secretly in the way of his advancement.

[12] See note 8, p. 2. Rawley should rather have said "counsel learned, *no longer extraordinary*". It is true indeed that King James did at his first entrance confirm Bacon by warrant under the sign manual in the same office which he had held under Elizabeth by special commandment. But it was the "establishing him and bringing him into *ordinary*" with a salary of 40*l*., which he reckons as first in the series of advancements. This was in 1604. He was made solicitor in 1607, attorney in 1613, counsellor of state in 1616, lord-keeper in 1617, lord chancellor in 1618. His successive dignities were conferred respectively in 1603, 1618, and 1620–1.

[13] Sir Edward Hyde, made Lord Chancellor June 1, 1660. This clause was added in 1661; the leaf having been cancelled for the purpose.

[14] Here the paragraph ended in the first edition. The rest was added in 1661.

[15] It appears, from a manuscript preserved in Tenison's Library, that he had about 220*l*. a-year with his wife, and upon her mother's death was to have about 140*l*. a-year more.

[16] By the "robe of honour" is meant, I presume, the title of viscountess. It appears however that a few months before Bacon's death his wife had given him some cause of grave offence. Special provision is made for her in the body of his will, but revoked in a codicil, "for just and great causes," the nature of which is not specified. Soon after his death she married Sir John Underwood, her gentleman-usher. She was buried at Eyworth in Bedfordshire on the 29th of June 1650.

[17] On the 3rd of May 1621, Bacon was condemned, upon a charge of corruption to which he pleaded guilty, to pay a fine of 40,000*l*.; to be imprisoned in the Tower during

active life, he employed wholly in contemplation and studies—a thing whereof his lordship would often speak during his active life, as if he affected to die in the shadow and not in the light; which also may be found in several passages of his works. In which time he composed the greatest part of his books and writings, both in English and Latin, which I will enumerate (as near as I can) in the just order wherein they were written[18]: *The History of the Reign of King Henry the Seventh; Abcedarium Naturæ*, or a Metaphysical piece which is lost[19]; *Historia Ventorum; Historia Vitæ et Mortis; Historia Densi et Rari*, not yet printed[20];

the king's pleasure; to be for ever incapable of sitting in parliament or holding office in the state; and to be banished for life from the verge of the court. From that time his only business was to find means of subsistence and of satisfying his creditors, and to pursue his studies.

His offence was the taking of presents from persons who had suits in his court, in some cases while the suit was still pending; an act which undoubtedly amounted to corruption as corruption was defined by the law. The degree of *moral* criminality involved in it is not so easily ascertained. To judge of this, we should know, First, what was the understanding, open or secret, upon which the presents were given and taken,—for a gift, though it be given to a judge, is not necessarily in the nature of a bargain to pervert justice: Secondly, to what extent the practice was prevalent at the time,—for it is a rare virtue in a man to resist temptations to which all his neighbours yield: Thirdly, how far it was *tolerated*,—for a practice may be universally condemned and yet universally tolerated; people may be known to be guilty of it and yet received in society all the same: Fourthly, how it stood with regard to other abuses prevailing at the same time,—for it is hard to reform all at once, and it is one thing for a man to leave a single abuse unreformed while he is labouring to remove or resist greater ones, and another thing to introduce it anew, or to leave all as it was, making no effort to remove any. Now all this is from the nature of the case very difficult to ascertain. But the whole question, as it regards Bacon's character, must be considered in connexion with the rest of his political life, and will be fully discussed in its place in the Occasional works; where all the evidence I can find shall be faithfully exhibited. In this place it may be enough to say that he himself always admitted the taking of presents as he had taken them to be indefensible, the sentence to be just, and the example salutary; and yet always denied that he had been an unjust judge, or "had ever had bribe or reward in his eye or thought when he pronounced any sentence or order"; and, that I cannot find any reason for doubting that this was true. It is stated, indeed, in a manuscript of Sir Matthew Hale's, published by Hargrave, that the censure of Bacon "for many decrees made upon most gross bribery and corruption . . . gave such a discredit and brand to the decrees thus obtained that they were easily set aside"; and it is true that some bills were brought into the House of Commons *for the purpose of* setting aside such decrees; but I cannot find that any one of them reached a third reading; and it is clear from Sir Matthew's own argument that he could not produce an instance of one reversed by the House of Lords; and if any had been reversed by a royal commission appointed for the purpose (which according to his statement was the only remaining way), it must surely have been heard of; yet where is the record of any such commission? Now if of all the decrees so discredited none were reversed, it is difficult to resist the conclusion that they had all been made *bonâ fide* with regard only to the merits of the cases, and were in fact unimpeachably just; and we may believe that Bacon pronounced a true judgment on his own case when he said to his friends (as I find it recorded in a manuscript of Dr. Rawley's in the Lambeth Library), "I was the justest judge that was in England these fifty years; but it was the justest censure in parliament that was these two hundred years."

[18] In the Latin version Rawley adds, *quam præsens observavi*: which gives this list a peculiar value.

[19] A fragment of this piece was recovered and printed by Tenison in the *Baconiana*; and will appear in this edition after the *Historia Ventorum*, which it was intended to accompany. [Not in the present reprint.]

[20] This was true in 1657; but it was printed the next year in the *Opuscula Philosophica*; and, therefore, for "not yet printed", the Latin version substitutes *jam primum typis mandata*. In the edition of 1661 a corresponding alteration ought to have been made in the English, but was not; and as the words occur in one of the cancelled leaves they must have been left by oversight.

Historia Gravis et Levis, which is also lost [21]; *a Discourse of a War with Spain; a Dialogue touching an Holy War; the Fable of the New Atlantis; a Preface to a Digest of the Laws of England; the beginning of the History of the Reign of King Henry the Eighth; De Augmentis Scientiarum*, or the Advancement of Learning, put into Latin [22], with several enrichments and enlargements; *Counsels Civil and Moral*, or his book of *Essays*, likewise enriched and enlarged; *the Conversion of certain Psalms into English Verse; the Translation into Latin of the History of King Henry the Seventh, of the Counsels Civil and Moral* [23], *of the Dialogue of the Holy War, of the Fable of the New Atlantis*, for the benefit of other nations [24]; his revising of his book *De Sapientiâ Veterum; Inquisitio de Magnete; Topica Inquisitionis de Luce et Lumine;* both these not yet printed [25]; lastly, *Sylva Sylvarum*, or *the Natural History*. These were the fruits and productions of his last five years. His lordship also designed, upon the motion and invitation of his late majesty, to have written the reign of King Henry the Eighth; but that work perished in the designation merely, God not lending him life to proceed farther upon it than only in one morning's work; whereof there is extant an *ex ungue leonem*, already printed in his lordship's *Miscellany Works*.

There is a commemoration due as well to his abilities and virtues as to the course of his life. Those abilities which commonly go single in other men, though of prime and observable parts, were all conjoined and met in him. Those are, *sharpness of wit, memory, judgment*, and *elocution*. For the former three his books do abundantly speak them; which [26] with what sufficiency he wrote, let the world judge; but with what celerity he wrote them, I can best testify. But for the fourth, his *elocution*, I will only set down what I heard Sir Walter Raleigh once speak of him by way of comparison (whose judgment may well be trusted), *That the Earl of Salisbury was an excellent speaker, but no good penman; that the Earl of Northampton (the Lord Henry Howard) was an excellent penman, but no good speaker; but that Sir Francis Bacon was eminent in both.*

I have been induced to think, that if there were a beam of knowledge derived from God upon any man in these modern times, it was upon him. For though he was a great reader of books, yet he had not his knowledge from books [27], but from some grounds and notions from within himself; which, notwithstanding, he vented with great caution and circumspection. His book of *Instauratio Magna* [28]

[21] This was probably the tract which Gruter says he once had in his hands, and which he describes as merely a skeleton, exhibiting heads of chapters not filled up. "*De Gravi et Levi in manibus habui integrum et grande volumen, sed quod, præter nudam delineatæ fabricæ compagem ex titulis materiam prout eam conceperat Baconus absolventibus, nihil descriptionis continebat.*" See his letter to Rawley, May 29, 1652, in the *Baconiana*, p. 223.

[22] In this [original] edition I have placed the *De Augmentis* before the *Historia Ventorum*, because, though published after, it was prepared and arranged, and in that sense composed, before. And in this view I am supported by a slight variation which is introduced here in the Latin version, viz. "Intervenerat *opus de Augmentis Scientiarum*", &c.

We learn also from the Latin version that Bacon worked at the translation of the *Advancement of Learning* himself: *in quo e linguâ vernaculâ*, proprio Marte, *in Latinam transferendo honoratissimus auctor plurimum desudavit.*

[23] These were the Essays as they appeared in the third and last edition; but he gave them a weightier title when he had them translated into "the general language": *exinde dicti, sermones fideles, sive interiora rerum.*

[24] The Latin version adds, *apud quos expeti audiverat.*

[25] These words are omitted in the Latin version, and must have been left by oversight in the edition of 1661; for they occur in one of the cancelled leaves; and the works in question had been printed in 1658. The error is the more worth noticing because it shows that wherever the English and the Latin differ, the Latin must be regarded as the later and better authority. [26] The Latin version adds, *ut de Julio Cæsare Hirtius.*

[27] *i.e.* not from books *only*: *Ex libris tamen solis scientiam suam deprompsisse haudquaquam concedere licet.*

[28] For *Instauratio Magna* in this place, and also for *Instauration* a few lines further on, the Latin version substitutes *Novum Organum*. Rawley, when he spoke of the *In-*

(which in his own account was the chiefest of his works) was no slight imagination or fancy of his brain, but a settled and concocted notion, the production of many years' labour and travel. I myself have seen at the least twelve copies of the *Instauration*, revised year by year one after another, and every year altered and amended in the frame thereof, till at last it came to that model in which it was committed to the press ; as many living creatures do lick their young ones, till they bring them to their strength of limbs.

In the composing of his books he did rather drive at a masculine and clear expression than at any fineness or affectation of phrases, and would often ask if the meaning were expressed plainly enough, as being one that accounted words to be but subservient or ministerial to matter, and not the principal. And if his style were polite [29], it was because he would do no otherwise. Neither was he given to any light conceits, or descanting upon words, but did ever purposely and industriously avoid them ; for he held such things to be but digressions or diversions from the scope intended, and to derogate from the weight and dignity of the style.

He was no plodder upon books ; though he read much, and that with great judgment, and rejection of impertinences incident to many authors ; for he would ever interlace a moderate relaxation of his mind with his studies, as walking, or taking the air abroad in his coach [30], or some other befitting recreation ; and yet he would lose no time, inasmuch as upon his first and immediate return he would fall to reading again, and so suffer no moment of time to slip from him without some present improvement.

His meals were refections of the ear as well as of the stomach, like the *Noctes Atticæ*, or *Convivia Deipno-sophistarum*, wherein a man might be refreshed in his mind and understanding no less than in his body. And I have known some, of no mean parts, that have professed to make use of their note-books when they have risen from his table. In which conversations, and otherwise, he was no dashing man [31], as some men are, but ever a countenancer and fosterer of another man's parts. Neither was he one that would appropriate the speech wholly to himself, or delight to outvie others, but leave a liberty to the co-assessors to take their turns. Wherein he would draw a man on and allure him to speak upon such a subject, as wherein he was peculiarly skilful, and would delight to speak. And for himself, he contemned no man's observations, but would light his torch at every man's candle.

His opinions and assertions were for the most part binding, and not contradicted by any ; rather like oracles than discourses ; which may be imputed either to the well weighing of his sentence by the scales of truth and reason, or else to the reverence and estimation wherein he was commonly had, that no man would contest with him ; so that there was no argumentation, or *pro* and *con* (as they term it), at his table : or if there chanced to be any, it was carried with much submission and moderation.

I have often observed, and so have other men of great account, that if he had occasion to repeat another man's words after him, he had an use and faculty to dress them in better vestments and apparel than they had before ; so that the author should find his own speech much amended, and yet the substance of it

stauration, was thinking, no doubt, of the volume in which the *Novum Organum* first appeared, and which contains all the pieces that stand in this edition before the *De Augmentis*.

[29] The Latin version adds : *Siquidem apud nostrates eloquii Anglicani artifex habitus est.*

[30] In the Latin version Rawley adds gentle exercise on horseback and playing at bowls : *Equitationem non citam sed lentam, globorum lusum, et id genus exercitia.*

[31] The word *dash* is used here in the same sense in which Costard uses it in *Love's Labour's Lost* : " There, an't please you ; a foolish, mild man ; an honest man, look you, and soon *dashed* " : Rawley means that Bacon was not a man who used his wit, as some do, to put his neighbours out of countenance : *Convivantium neminem aut alios colloquentium* pudore suffundere *gloriæ sibi duxit, sicut nonnulli gestiunt.*

still retained [32]; as if it had been natural to him to use good forms, as Ovid spake of his faculty of versifying,

"Et quod tentabam scribere, versus erat".

When his office called him, as he was of the king's council learned, to charge any offenders, either in criminals or capitals, he was never of an insulting and domineering nature over them, but always tender-hearted, and carrying himself decently towards the parties (though it was his duty to charge them home), but yet as one that looked upon the *example* with the eye of severity, but upon the *person* with the eye of pity and compassion. And in civil business, as he was counsellor of estate, he had the best way of advising, not engaging his master in any precipitate or grievous courses, but in moderate and fair proceedings: the king whom he served giving him this testimony, *That he ever dealt in business* suavibus modis; *which was the way that was most according to his own heart.*

Neither was he in his time less gracious with the subject than with his sovereign. He was ever acceptable to the House of Commons [33] when he was a member thereof. Being the king's attorney, and chosen to a place in parliament, he was allowed and dispensed with to sit in the House; which was not permitted to other attorneys.

And as he was a good servant to his master, being never in nineteen years' service (as himself averred) rebuked by the king for anything relating to His Majesty, so he was a good master to his servants, and rewarded their long attendance with good places freely [34] when they fell into his power; which was the cause that so many young gentlemen of blood and quality sought to list themselves in his retinue. And if he were abused by any of them in their places, it was not only the error of the goodness of his nature, but the badges of their indiscretions and intemperances.

This lord was religious: for though the world be apt to suspect and prejudge great wits and politics to have somewhat of the atheist, yet he was conversant with God, as appeareth by several passages throughout the whole current of his writings. Otherwise he should have crossed his own principles, which were,

[32] This is probably the true explanation of a habit of Bacon's which seems at first sight a fault, and perhaps sometimes is; and of which a great many instances have been pointed out by Mr. Ellis;—a habit of inaccurate quotation. In quoting an author's words,—especially where he quotes them merely by way of voucher for his own remark, or in acknowledgment of the source whence he derived it, or to suggest an allusion which may give a better effect to it,—he very often quotes inaccurately. Sometimes, no doubt, this was unintentional, the fault of his memory; but more frequently, I suspect, it was done deliberately, for the sake of presenting the substance in a better form, or a form better suited to the particular occasion. In citing the evidence of witnesses, on the contrary, in support of a narrative statement or an argument upon matter of fact, he is always very careful.

[33] The Latin version adds, *in quo sæpe peroravit, non sine magno applausu;* a statement of the truth of which abundant evidence may be found in all the records which remain of the proceedings of the House of Commons. The first parliament in which he sate was that of 1584: after which he sate in every parliament that was summoned up to the time of his fall.

As an edition of Bacon would hardly be complete unless it contained Ben Jonson's famous description of his manner of speaking, I shall insert it here:—"Yet there happened in my time one noble speaker, who was full of gravity in his speaking. His language (where he could spare or pass by a jest) was nobly censorious. No man ever spoke more neatly, more pressly, more weightily, or suffered less emptiness, less idleness, in what he uttered. No member of his speech but consisted of his own graces. His hearers could not cough, or look aside from him, without loss. He commanded where he spoke; and had his judges angry and pleased at his devotion. No man had their affections more in his power. The fear of every man that heard him was, lest he should make an end." —*Discoveries*: under title *Dominus Verulamius.*

[34] *Gratis*, in the Latin version; *i.e.* without taking any money for them, an unusual thing in Bacon's time, when the sale of offices was a principal source of all great men's incomes.

That a little philosophy maketh men apt to forget God, as attributing too much to second causes ; but depth of philosophy bringeth a man back to God again. Now I am sure there is no man that will deny him, or account otherwise of him, but to have him been a deep philosopher. And not only so ; but he was able *to render a reason of the hope which was in him*, which that writing of his of the *Confession of the Faith* doth abundantly testify. He repaired frequently, when his health would permit him, to the service of the church, to hear sermons, to the administration of the sacrament of the blessed Body and Blood of Christ ; and died in the true faith, established in the Church of England.

This is most true—he was free from malice, which (as he said himself) *he never bred nor fed* [35]. He was no revenger of injuries ; which if he had minded, he had both opportunity and place high enough to have done it. He was no heaver of men out of their places, as delighting in their ruin and undoing. He was no defamer of any man to his prince. One day, when a great statesman was newly dead, that had not been his friend, the king asked him, *What he thought of that lord which was gone ?* he answered, *That he would never have made His Majesty's estate better, but he was sure he would have kept it from being worse* ; which was the worst he would say of him : which I reckon not among his moral, but his Christian virtues.

His fame is greater and sounds louder in foreign parts abroad, than at home in his own nation ; thereby verifying that divine sentence, *A prophet is not without honour, save in his own country, and in his own house.* Concerning which I will give you a taste only, out of a letter written from Italy (the storehouse of refined wits) to the late Earl of Devonshire, then the Lord Candish : *I will expect the new essays of my Lord Chancellor Bacon, as also his History, with a great deal of desire, and whatsoever else he shall compose ; but in particular of his History I promise myself a thing perfect and singular, especially in Henry the Seventh, where he may exercise the talent of his divine understanding. This lord is more and more known, and his books here more and more delighted in ; and those men that have more than ordinary knowledge in human affairs, esteem him one of the most capable spirits of this age ; and he is truly such.* Now his fame doth not decrease, with days since, but rather increase. Divers of his works have been anciently and yet lately translated into other tongues, both learned and modern, by foreign pens. Several persons of quality, during his lordship's life, crossed the seas on purpose to gain an opportunity of seeing him and discoursing with him ; whereof one carried his lordship's picture from head to foot [36] over with him into France, as a thing which he foresaw would be much desired there, that so they might enjoy the image of his person as well as the images of his brain, his books. Amongst the rest, Marquis Fiat, a French nobleman, who came ambassador into England, in the beginning of Queen Mary, wife to King Charles, was taken with an extraordinary desire of seeing him ; for which he made way by a friend ; and when he came to him, being then through weakness confined to his bed, the marquis saluted him with this high expression, *That his lordship had been ever to him like*

[35] "He said he had breeding swans and feeding swans ; but for malice, he neither bred it nor fed it." From a commonplace book of Dr. Rawley's in the Lambeth Library. "Et posso dir," says Sir Tobie Matthew, in his dedication to Cosmo de' Medici of an Italian translation of the *Essays* and *Sapientia Veterum*, 1618, "et posso dir con verita (per haver io havuto l'honore di pratticarlo molti anni, et quando era *in minoribus*, et hora quando sta in colmo et fiore della sua grandezza) di non haver mai scoperto in lui animo di vendetta, per qualsivoglia aggravio che se gli fosse fatto ; nè manco sentito uscirgli di bocca parola d'ingiuria contra veruno, che mi paresse venite da passione contra la tal persona ; ma solo (et questo ancora molto scarsamente) per giudicio fattone in sangue freddo. Non è già la sua grandezza quel che io ammiro, ma la sua virtù ; non sono li favori fattimi da lui (per infiniti che siano) che mi hanno posto il cuore in questi ceppi et catene in che mi ritrovo, ma si bene il suo procedere in commune ; che se egli fosse di conditione inferiore, non potrei manco honorarlo, e se mi fosse nemico io dovrei con tutto ciò amar et procurar di servirlo."

[36] This picture was presented to him by Bacon himself, according to the Latin version.

the angels; of whom he had often heard, and read much of them in books, but he never saw them. After which they contracted an intimate acquaintance, and the marquis did so much revere him, that besides his frequent visits, they wrote letters one to the other, under the titles and appellations of father and son. As for his many salutations by letters from foreign worthies devoted to learning, I forbear to mention them, because that is a thing common to other men of learning or note, together with him.

But yet, in this matter of his fame, I speak in the comparative only, and not in the exclusive. For his reputation is great in his own nation also, especially amongst those that are of a more acute and sharper judgment; which I will exemplify but with two testimonies, and no more. The former, when his *History of King Henry the Seventh* was to come forth, it was delivered to the old Lord Brook, to be perused by him; who, when he had dispatched it, returned it to the author with this eulogy, *Commend me to my lord, and bid him take care to get good paper and ink, for the work is incomparable.* The other shall be that of Doctor Samuel Collins, late provost of King's College in Cambridge, a man of no vulgar wit, who affirmed unto me [37], *That when he had read the book of the Advancement of Learning, he found himself in a case to begin his studies anew, and that he had lost all the time of his studying before.*

It hath been desired, that something should be signified touching his diet and the regimen of his health, of which, in regard of his universal insight into nature, he may perhaps be to some an example. For his diet, it was rather a plentiful and liberal diet, as his stomach would bear it, than a restrained; which he also commended in his book of the *History of Life and Death.* In his younger years he was much given to the finer and lighter sort of meats, as of fowls, and such like; but afterward, when he grew more judicious [38], he preferred the stronger meats, such as the shambles afforded, as those meats which bred the more firm and substantial juices of the body, and less *dissipable;* upon which he would often make his meal, though he had other meats upon the table. You may be sure he would not neglect that himself, which he so much extolled in his writings, and that was the use of nitre; whereof he took in the quantity of about three grains in thin warm broth every morning, for thirty years together next before his death. And for physic, he did indeed live physically, but not miserably; for he took only a maceration of rhubarb [39], infused into a draught of white wine and beer mingled together for the space of half an hour, once in six or seven days, immediately before his meal (whether dinner or supper), that it might dry the body less; which (as he said) did carry away frequently the grosser humours of the body, and not diminish or carry away any of the spirits, as sweating doth. And this was no grievous thing to take. As for other physic, in an ordinary way (whatsoever hath been vulgarly spoken) he took not. His receipt for the gout, which did constantly ease him of his pain within two hours, is already set down in the end of the *Natural History.*

It may seem the moon had some principal place in the figure of his nativity: for the moon was never in her passion, or eclipsed [40], but he was surprised with a sudden fit of fainting; and that, though he observed not nor took any previous knowledge of the eclipse thereof; and as soon as the eclipse ceased, he was restored to his former strength again.

[37] In the Latin version Rawley has thought it worth while to add that this may have been said playfully: *Sive festive sive serio.*

[38] More judicious (that is) by experience and observation: *experientiâ edoctus* is the expression in the Latin version,

[39] In the Latin version Rawley gives the quantity: *Rhabarbari sesquidrachmam.*

[40] Lord Campbell (who appears to have read Rawley's memoir only in the Latin, where the words are *quoties luna* defecit *sive eclipsin passa est*), supposing *defecit* to mean *waned,* discredits this statement, on the ground that "no instance is recorded of Bacon's having fainted in public, or put off the hearing of any cause on account of *the change of the moon,* or of any approaching eclipse, visible or invisible". And it is true that if *defectus lunæ* meant a change of the moon, or even a dark moon (which it might have meant well enough if the Romans had not chosen to appropriate the word to quite another meaning),

He died on the ninth day of April in the year 1626, in the early morning of the day then celebrated for our Saviour's resurrection, in the sixty-sixth year of his age, at the Earl of Arundel's house in Highgate, near London, to which place he casually repaired about a week before; God so ordaining that he should die there of a gentle fever, accidentally accompanied with a great cold, whereby the defluxion of rheum fell so plentifully upon his breast, that he died by suffocation; and was buried in St. Michael's Church at St. Albans; being the place designed for his burial by his last will and testament, both because the body of his mother was interred there, and because it was the only church then remaining within the precincts of old Verulam: where he hath a monument erected for him in white marble (by the care and gratitude of Sir Thomas Meautys, knight, formerly his lordship's secretary, afterwards clerk of the King's Honourable Privy Council under two kings); representing his full portraiture in the posture of studying, with an inscription composed by that accomplished gentleman and rare wit, Sir Henry Wotton [41].

But howsoever his body was mortal, yet no doubt his memory and works will live, and will in all probability last as long as the world lasteth. In order to which I have endeavoured (after my poor ability) to do this honour to his lordship, by way of conducing to the same.

the accident must have happened in public too often to pass unnoticed. But Rawley was too good a scholar to misapply so common a word in that way. He evidently speaks of eclipses only, and of eclipses visible at the place. Now it is not at all likely that lunar eclipses visible at Westminster would have coincided with important business in which Bacon was conspicuously engaged, often enough (even if he did not faint every time) to establish a connexion between the two phenomena. Of course Rawley's statement is not sufficient to prove the reality of any such connexion; but the fact of the fainting-fits need not be doubted, and may be fairly taken, I think, as evidence of the extreme delicacy of Bacon's temperament, and its sensibility to the skiey influences. That Bacon himself never alluded to this relation between himself and the moon is easily accounted for by supposing that he was not satisfied of the fact. He may have observed the coincidence, and mentioned it to Rawley; and Rawley (whose commonplace book proves that he had a taste for astrology) may have believed in the physical connexion, though Bacon himself did not.

FINIS.

[41] FRANCISCUS BACON, BARO DE VERULAM, S^T^. ALBANI VIC^mes^,
SEU NOTIORIBUS TITULIS
SCIENTIARUM LUMEN FACUNDIÆ LEX
SIC SEDEBAT.

QUI POSTQUAM OMNIA NATURALIS SAPIENTIÆ
ET CIVILIS ARCANA EVOLVISSET
NATURÆ DECRETUM EXPLEVIT
COMPOSITA SOLVANTUR
AN. DÑI. M.DC.XXVI.
ÆTAT^is^ LXVI.

TANTI VIRI
MEM.
THOMAS MEAUTUS
SUPERSTITIS CULTOR
DEFUNCTI ADMIRATOR
H. P.

GENERAL PREFACE TO BACON'S PHILOSOPHICAL WORKS

By ROBERT LESLIE ELLIS

(1) Our knowledge of Bacon's method is much less complete than it is commonly supposed to be. Of the *Novum Organum*, which was to contain a complete statement of its nature and principles, we have only the first two books; and although in other parts of Bacon's writings, as for instance in the *Cogitata et Visa de Interpretatione Naturæ*, many of the ideas contained in these books recur in a less systematic form, we yet meet with but few indications of the nature of the subjects which were to have been discussed in the others. It seems not improbable that some parts of Bacon's system were never perfectly developed even in his own mind. However this may be, it is certain that an attempt to determine what his method, taken as a whole, was or would have been, must necessarily involve a conjectural or hypothetical element; and it is, I think, chiefly because this circumstance has not been sufficiently recognized, that the idea of Bacon's philosophy has generally speaking been but imperfectly apprehended.

(2) Of the subjects which were to have occupied the remainder of the *Novum Organum* we learn something from a passage at the end of the second book.

"Nunc vero," it is said at the conclusion of the doctrine of prerogative instances, "ad adminicula et rectificationes inductionis, et deinceps ad concreta, et latentes processus, et latentes schematismos, et reliqua quæ aphorismo XXI ordine proposuimus, pergendum".* On referring to the twenty-first aphorism we find a sort of table of contents of the whole work. "Dicemus itaque primo loco, de prærogativis instantiarum; secundo, de adminiculis inductionis; tertio, de rectificatione inductionis; quarto, de variatione inquisitionis pro naturâ subjecti; quinto, de prærogativis naturarum quatenus ad inquisitionem, sive de eo quod inquirendum est prius et posterius; sexto, de terminis inquisitionis, sive de synopsi omnium naturarum in universo; septimo, de deductione ad praxin, sive de eo quod est in ordine ad hominem; octavo, de parascevis ad inquisitionem; postremo autem, de scalâ ascensoriâ et descensoriâ axiomatum."† Of these nine subjects the first is the only one with which we are at all accurately acquainted.

(3) Bacon's method was essentially inductive. He rejected the use of syllogistic or deductive reasoning, except when practical applications were to be made of the conclusions, axiomata, to which the inquirer had been led by a systematic process of induction. "Logica quæ nunc habetur inutilis est ad inventionem scientiarum. . . . . Spes est una in inductione verâ."[1] It is to be observed that wherever Bacon speaks of an "ascending" process, he is to be understood to mean induction, of which it is the character to proceed from that which is *nobis notius* to that which is *notius simpliciter*. Contrariwise when he speaks of a descent, he always refers to the correlative process of deduction. Thus when in the *Partis secundæ Delineatio* he says, . . . "meminerint homines in inquisitione activâ necesse esse rem per scalam decensoriam (cujus usum in contemplativâ sustulimus) confici: omnis enim operatio in individuis versatur quæ

[* Trans. below, "But now I must proceed," etc.]
[† Trans. below, "I propose to treat them in the first place", etc.]
[1] Nov. Org. i. 11. and 14.

infimo loco sunt,"—we are to understand that in Bacon's system deduction is only admissible in the inquisitio activa; that is, in practical applications of the results of induction. Similiarly in the *Distributio Operis* he says, "Rejicimus syllogismum; neque id solùm quoad principia (ad quæ nec illi eam adhibent) sed etiam quoad propositiones medias"*. Everything was to be established by induction. "In constituendo autem axiomate forma inductionis alia quàm adhuc in usu fuit excogitanda est, eaque non ad principia tantùm (quæ vocant) probanda et invenienda, sed etiam ad axiomata minora, et media, denique omnia."[2]

(4) It is necessary to determine the relation in which Bacon conceived his method to stand to ordinary induction. Both methods set out "a sensu et particularibus," and acquiesce "in maximè generalibus"[3]; but while ordinary induction proceeds "per enumerationem simplicem," by a mere enumeration of particular cases, "et precario concludit et periculo exponitur ab instantiâ contradictoriâ", the new method "naturam separare debet, per rejectiones et exclusiones debitas; et deinde post negativas tot quot sufficiunt super affirmativas concludere"[4]. A form of induction was to to be introduced, "quæ ex aliquibus generaliter concludat ita ut instantiam contradictoriam inveniri non posse demonstretur"[5]. In strong contrast with this method stands "the induction which the logicians speak of", which "is utterly vicious and incompetent". . . . "For to conclude upon an enumeration of particulars, without instance contradictory, is no conclusion, but a conjecture". . . . "And this form, to say truth, is so gross, as it had not been possible for wits so subtile as have managed these things to have offered it to the world, but that they trusted to their theories and dogmaticals, and were imperious and scornful towards particulars[6]." We thus see what is meant by the phrase "quot sufficiunt" in the passage which has been cited from the *Novum Organum*; it means "as many as may suffice in order to the attainment of certainty", it being necessary to have a method of induction, "quæ experientiam solvat et separet, et per exclusiones et rejectiones debitas necessario concludat"[7]. Absolute certainty is therefore one of the distinguishing characters of the Baconian induction. Another is that it renders all men equally capable, or nearly so, of attaining to the truth. "Nostra verò inveniendi scientias ea est ratio ut non multum ingeniorum acumini et robori relinquatur; sed quæ ingenia et intellectus ferè exæquet"[8]; and this is illustrated by the difficulty of describing a circle liberâ manu, whereas every one can do it with a pair of compasses. "Omninò similis est nostra ratio." The cause to which this peculiarity is owing, is sufficiently indicated by the illustration: the method "exæquat ingenia", "cùm omnia per certissimas regulas et demonstrationes transigat".

(5) Absolute certainty, and a mechanical mode of procedure such that all men should be capable of employing it, are thus two great features of the Baconian method. His system can never be rightly understood if they are neglected, and any explanation of it which passes them over in silence leaves unexplained the principal difficulty which that system presents to us. But another difficulty takes the place of the one which is thus set aside. It becomes impossible to justify or to understand Bacon's assertion that his method was essentially new. "Nam nos," he says in the preface to the *Novum Organum*, "si profiteamur nos meliora afferre quam antiqui, eandem quam illi viam ingressi, nullâ verborum arte efficere possimus, quin inducatur quædam ingenii, vel excellentiæ, vel facultatis comparatio, sive contentio. . . . Verùm cùm per nos illud agatur, ut *alia omnino via* intellectui aperiatur illis intentata et incognita, commutata tota

[* Trans. below, "I therefore reject the syllogism," etc.]

[2] Nov. Org. i. 105.

[3] Nov. Org. i. 22. [4] Nov. Org. i. 105. [5] Cogitata et Visa § 18.

[6] Advancement of Learning. The corresponding passage in the De Augm. is in the 2nd chap. of the 5th book. [7] Distrib. Operis, § 10.

[8] Nov. Org. i. 61., and comp. i. 122. Also the Inquisitio legitima de Motu, and Valerius Terminus, c. 19.

jam ratio est ", etc.* He elsewhere speaks of himself as being " in hâc re plane protopirus, et vestigia nullius sequutus " [9]. Surely this language would be out of place, if the difference between him and those who had gone before him related merely to matters of detail; as, for instance, that his way of arranging the facts of observation was more convenient than theirs, and his way of applying an inductive process to them more systematic. And it need not be remarked that induction in itself was no novelty at all. The nature of the act of induction is as clearly stated by Aristotle as by any later writer. Bacon's design was surely much larger than it would thus appear to have been. Whoever considers his writings without reference to their place in the history of philosophy will I think be convinced that he aimed at giving a wholly new method,—a method universally applicable, and in all cases infallible. By this method, all the knowledge which the human mind is capable of receiving might be attained, and attained without unnecessary labour. Men were no longer to wander from the truth in helpless uncertainty. The publication of this new doctrine was the *Temporis Partus Masculus*; it was as the rising of a new sun, before which " the borrowed beams of moon and stars " were to fade away and disappear [10].

(6) That the wide distinction which Bacon conceived to exist between his own method and any which had previously been known has often been but slightly noticed by those who have spoken of his philosophy, arises probably from a wish to recognize in the history of the scientific discoveries of the last two centuries the fulfilment of his hopes and prophecies. One of his early disciples however, who wrote before the scientific movement which commenced about Bacon's time had assumed a definite form and character—I mean Dr. Hooke—has explicitly adopted those portions of Bacon's doctrine which have seemingly been as a stumbling-block to his later followers. In Hooke's *General Scheme or Idea of the Present State of Natural Philosophy* [11], which is in many respects the best commentary on Bacon, we find it asserted that in the pursuit of knowledge, the intellect " is continually to be assisted by some method or engine which shall be as a guide to regulate its actions, so as that it shall not be able to act amiss. Of this engine no man except the incomparable Verulam hath had any thoughts, and he indeed hath promoted it to a very good pitch." Something however still remained to be added to this engine or art of invention, to which Hooke gives the name of philosophical algebra. He goes on to say, " I cannot doubt but that if this art be well prosecuted and made use of, an ordinary capacity with industry will be able to do very much more than has yet been done, and to show that even physical and natural inquiries as well as mathematical and geometrical will be capable also of demonstration; so that henceforward the business of invention will not be so much the effect of acute wit, as of a serious and industrious prosecution " [12]. Here the absolute novelty of Bacon's method, its demonstrative character, and its power of reducing all minds to nearly the same level, are distinctly recognized.

(7) Before we examine the method of which Bacon proposed to make use, it is necessary to determine the nature of the problems to which it was, for the most part at least, to be applied. In other words, we must endeavour to determine the idea which he had formed of the nature of science.

Throughout his writings, science and power are spoken of as correlative— " in idem coincidunt "; and the reason of this is that Bacon always assumed that the knowledge of the cause would in almost all cases enable us to produce the observed effect. We shall see hereafter how this assumption connected itself with the whole spirit of his philosophy. I mention it now because it presents

[* Trans. below, " For if I should profess that I," etc. " As it is, however," etc.]

[9] Nov. Org. i. 113.

[10] See, for instance, the *Præfatio Generalis*, where Bacon compares his method to the mariner's compass, until the discovery of which no wide sea could be crossed; an image probably connected with his favourite device of a ship passing through the pillars of Hercules, with the motto " Plus ultra ".

[11] Published posthumously in 1705.

[12] Present State of Nat. Phil. pp. 6, 7.

itself in the passage in which Bacon's idea of the nature of science is most distinctly stated. "Super datum corpus novam naturam, sive novas naturas, generare et superinducere, opus et intentio est humanæ potentiæ. Datæ autem naturæ formam, sive differentiam veram, sive naturam naturantem, sive fontem emanationis, (ista enim vocabula habemus quæ ad indicationem rei proxime accedunt) invenire, opus et intentio est humanæ scientiæ." This passage, with which the second book of the *Novum Organum* commences, requires to be considered in detail.

In the first place it is to be remarked, that natura signifies "abstract quality" —it is used by Bacon in antithesis with corpus or "concrete body". Thus the passage we have quoted amounts to this, that the scope and end of human power is to give new qualities to bodies, while the scope and end of human knowledge is to ascertain the formal cause of all the qualities of which bodies are possessed.

Throughout Bacon's philosophy, the necessity of making abstract qualities (naturæ) the principal object of our inquiries is frequently insisted on. He who studies the concrete and neglects the abstract cannot be called an interpreter of nature. Such was Bacon's judgment when, apparently at an early period of his life, he wrote the *Temporis Partus Masculus* [13]; and in the *Novum Organum* he has expressed an equivalent opinion: "quòd iste modus operandi, (qui naturas intuetur simplices licet in corpore concreto) procedat ex iis quæ in naturâ sunt constantia et æterna et catholica, et latas præbeat potentiæ humanæ vias [14]". Quite in accordance with this passage is a longer one in the *Advancement of Learning*, which I shall quote in extenso, as it is exceedingly important. "The forms of substances, I say, as they are now by compounding and transplanting multiplied, are so perplexed as they are not to be inquired; no more than it were either possible or to purpose to seek in gross the forms of those sounds which make words, which by composition and transposition of letters are infinite. But on the other side to inquire the form of those sounds or voices which make simple letters is easily comprehensible, and being known induceth and manifesteth the forms of all words which consist and are compounded of them. In the same manner, to inquire the form of a lion, of an oak, of gold—nay of water, or air—is a vain pursuit; but to inquire the forms of sense, of voluntary motion, of vegetation, of colours, of gravity and levity, of density, of tenuity, of heat, of cold, and all other natures and qualities which like an alphabet are not many, and of which the essences upheld by matter of all creatures do consist,—to inquire, I say, the true forms of these, is that part of metaphysique which we now define of." And a little farther on we are told that it is the prerogative of metaphysique to consider "the simple forms or difference of things" (that is to say, the forms of simple natures), "which are few in number, and the degrees and co-ordinations whereof make all this variety".

We see from these passages why the study of simple natures is so important—namely because they are comparatively speaking few in number, and because, notwithstanding this, a knowledge of their essence would enable us, at least in theory, to solve every problem which the universe can present to us.

As an illustration of the doctrine of simple natures, we may take a passage which occurs in the *Silva Silvarum*. "Gold," it is there said, "has these natures: greatness of weight, closeness of parts, fixation, pliantness or softness, immunity from rust, colour or tincture of yellow. Therefore the sure way, though most about, to make gold, is to know the causes of the several natures before rehearsed, and the axioms concerning the same. For if a man can make a metal that hath all these properties, let men dispute whether it be gold or no [15]."

Of these simple natures Bacon has given a list in the third book of the *De*

[13] Mr. Ellis alludes, I think, to the *De Interpretatione Naturæ Sententiæ* XII., which M. Bouillet prints as part of the *Temporis Partus Masculus*. My reasons for differing with M. Bouillet on this point, and placing it by itself, and assigning it a later date, will be found in a note to Mr. Ellis's Preface to the *Novum Organum*.—*J. S.*

[14] Nov. Org. ii. 5. [15] Compare Nov. Org. ii. 5.

Augmentis. They are divided into two classes: schematisms of matter, and simple motions. To the former belong the abstract qualities, dense, rare, heavy, light, &c., of which thirty-nine are enumerated, the list being concluded with a remark that it need not be carried farther, "neque ultra rem extendimus". The simple motions—and it will be observed that the word "motion" is used in a wide and vague sense—are the motus antitypiæ, which secures the impenetrability of matter; the motus nexûs, commonly called the motus ex fugâ vacui, &c.; and of these motions fourteen are mentioned. This list however does not profess to be complete, and accordingly in the *Novum Organum* (ii. 48) another list of simple motions is given, in which nineteen species are recognised.

The view of which we have now been speaking—namely, that it is possible to reduce all the phenomena of the universe to combinations of a limited number of simple elements—is the central point of Bacon's whole system. It serves, as we shall see, to explain the peculiarities of the method which he proposed.

(8) In what sense did Bacon use the word "Form"? This is the next question which, in considering the account which he has given of the nature of science, it is necessary to examine. I am, for reasons which will be hereafter mentioned, much disposed to believe that the doctrine of Forms is in some sort an extraneous part of Bacon's system. His peculiar method may be stated independently of this doctrine, and he has himself so stated it in one of his earlier tracts, namely the *Valerius Terminus*. It is at any rate certain, that in using the word "Form" he did not intend to adopt the scholastic mode of employing it. He was much in the habit of giving to words already in use a new signification. "To me," he remarks in the *Advancement of Learning*, "it seemeth best to keep way with antiquity usque ad aras, and therefore to retain the ancient terms, though I sometimes alter the uses and definitions." And thus though he has spoken of the scholastic forms as figments of the human mind [16], he was nevertheless willing to employ the word "Form" in a modified sense, "præsertim quum hoc vocabulum invaluerit, et familiariter occurrat" [17]. He has however distinctly stated that in speaking of Forms, he is not to be understood to speak of the Forms "quibus hominum contemplationes et cogitationes hactenus assueverunt" [18].

As Bacon uses the word in his own sense, we must endeavour to interpret the passages in which it occurs by means of what he has himself said of it; and this may I think be satisfactorily accomplished.

We may begin by remarking that in Bacon's system, as in those of many others, the relation of substance and attribute is virtually the same as the relation of cause and effect. The substance is conceived of as the causa immanens of its attributes [19], or in other words it is the formal cause of the qualities which are referred to it. As there is a difference between the properties of different substances there must be a corresponding difference between the substances themselves. But in the first state of the views of which we are speaking this latter difference is altogether unimaginable: "distincte quidem intelligi potest, sed non explicari imaginabiliter" [20]. It belongs not to natural philosophy, but to metaphysics.

These views however admit of an essential modification. If we divide the qualities of bodies into two classes, and ascribe those of the former class to substance as its essential attributes, while we look on those of the latter as connected with substance by the relation of cause and effect—that is, if we recognise the distinction of primary and secondary qualities—the state of the question is changed. It now becomes possible to give a definite answer to the question, Wherein does the difference between different substances, corresponding to the difference between their sensible qualities, consist?

The answer to this question of course involves a reference to the qualities which have been recognised as primary; and we are thus led to the principle that in the sciences which relate to the secondary qualities of bodies the primary ones are to be regarded as the causes of the secondary [21].

[16] Nov. Org. i. 51. [17] Nov. Org. ii. 2. [18] Nov. Org. ii. 17.
[19] See Zimmermann's Essay on the Monadology of Leibnitz, p. 81, (Vienna, 1807).
[20] Leibnitz, De ipsâ Naturâ. [21] Whewell, Phil. Ind. Science, [book iv. ch. i.].

This division of the qualities of bodies into two classes is the point of transition from the metaphysical view from which we set out to that of ordinary physical science. And this transition Bacon had made, though not perhaps with a perfect consciousness of having done so. Thus he has repeatedly denied the truth of the scholastic doctrine that Forms are incognoscible because supra-sensible [22]; and the reason of this is clearly that his conception of the nature of Forms relates merely to the primary qualities of bodies. For instance, the Form of heat is a kind of local motion of the particles of which bodies are composed [23], and that of whiteness, a mode of arrangement among those particles [24]. This peculiar motion or arrangement corresponds to and engenders heat or whiteness, and this in every case in which those qualities exist. The statement of the distinguishing character of the motion or arrangement, or of whatever else may be the Form of a given phenomenon, takes the shape of a law; it is the law in fulfilling which any substance determines the existence of the quality in question. It is for this reason that Bacon sometimes calls the Form a law; he has done this particularly in a passage which will be mentioned a little farther on.

With the view which has now been stated, we shall I think be able to understand every passage in which Bacon speaks of Forms;—remembering however that as he has not traced a boundary line between primary and secondary qualities, we can only say in general terms that his doctrine of Forms is founded upon the theory that certain qualities of bodies are merely subjective and phenomenal, and are to be regarded as necessarily resulting from others which belong to substance as its essential attributes. In the passage from which we set out [25], the Form is spoken of as vera differentia, the true or essential difference,—as natura naturans—and as the fons emanationis. The first of these expressions refers to the theory of definition by genus and difference. The difference is that which gives the thing defined its specific character. If it be founded on an accidental circumstance the definition, though not incorrect if the accident be an inseparable one, will nevertheless not express the true and essential character of its subject; contrariwise, if it involve a statement of the formal cause of the thing defined.

The second of these phrases is now scarcely used, except in connexion with the philosophy of Spinoza. It had however been employed by some of the scholastic writers [26]. It is always antithetical to natura naturata, and in the passage before us serves not inaptly to express the relation in which the Form stands to the phenomenal nature which results from it.

The phrase fons emanationis does not seem to require any explanation. It belongs to the kind of philosophical language which attempts, more or less successfully, to give clearness of conception by means of metaphor. It is unnecessary to remark how much this is the case in the later development of scholasticism.

A little farther on in the second book of the *Novum Organum* than the passage we have been considering—namely in the thirteenth aphorism—Bacon asserts that the " forma rei " is " ipsissima res ", and that the thing and its Form differ only as " apparens et existens, aut exterius et interius, aut in ordine ad hominem et in ordine ad universum ". Here the subjective and phenomenal character of the qualities whose form is to be determined is distinctly and strongly indicated.

The principal passage in which the Form is spoken of as a law occurs in the second aphorism of the same book. It is there said that, although in nature nothing really exists (vere existat) except " corpora individua edentia actus puros individuos ex lege ", yet that in doctrine this law is of fundamental importance, and that it and its clauses (paragraphi) are what he means when he speaks of Forms.

In denying the real existence of anything beside individual substances, Bacon opposes himself to the scholastic realism; in speaking of these substances as "edentia actus," he asserts the doctrine of the essential activity of substance;

[22] See Scaliger, Exercit. in Cardan. [23] Nov. Org. ii. 20.
[24] [Valerius Terminus, II. 1.]
[25] [Nov. Org ii. 1.] [26] See Vossius De Vitiis Serm. in voce Naturare; and Castanæus, Distinctiones in voc. Natura.

by adding the epithet "puros" he separates what Aristotle termed ἐντελέχειαι from mere motions or κινήσεις, thereby by implication denying the objective reality of the latter; and, lastly, by using the word "individuos", he implies that though in contemplation and doctrine the form law of the substance (that is, the substantial form) is resoluble into the forms of the simple natures which belong to it, as into clauses, yet that this analysis is conceptual only, and not real.

It will be observed that the two modes in which Bacon speaks of the Form, namely as ipsissima res and as a law, differ only, though they cannot be reconciled, as two aspects of the same object.

Thus much of the character of the Baconian Form. That it is after all only a physical conception appears sufficiently from the examples already mentioned, and from the fact of its being made the most important part of the subject-matter of the natural sciences.

The investigation of the Forms of natures or abstract qualities is the principal object of the Baconian method of induction. It is true that Bacon, although he gives the first place to investigations of this nature, does not altogether omit to mention as a subordinate part of science, the study of concrete substances. The first aphorism of the second book of the *Novum Organum* sufficiently explains the relation in which, as he conceived, the abstract and the concrete, considered as objects of science, ought to stand to one another. This relation corresponds to that which in the *De Augmentis* [iii. 4.], he had sought to establish between Physique and Metaphysique, and which he has there expressed by saying that the latter was to be conversant with the formal and final causes, while the former was to be confined to the efficient cause and to the material. It may be asked, and the question is not easily answered, Of what use the study of concrete bodies was in Bacon's system to be, seeing that the knowledge of the Forms of simple natures would, in effect, include all that can be known of the outward world? I believe that, if Bacon's recognition of physique as a distinct branch of science which was to be studied apart from metaphysique or the doctrine of Forms, can be explained except on historical grounds—that is, except by saying that it was derived from the quadripartite division of causes given by Aristotle [27]—the explanation is merely this, that he believed that the study of concrete bodies would at least at first be pursued more hopefully and more successfully than the abstract investigations to which he gave the first rank [28].

However this may be, it seems certain that Bacon's method, as it is stated in the *Novum Organum*, is primarily applicable to the investigation of Forms, and that when other applications were made of it, it was to be modified in a manner which is nowhere distinctly explained. All in fact that we know of these modifications results from comparing two passages which have been already quoted [29], namely the two lists in which Bacon enumerates the subjects to be treated of in the latter books of the *Novum Organum*.

It will be observed that in one of these lists the subject of concrete bodies corresponds to the "variation of the investigation according to the nature of the subject" in the other, and from this it seems to follow that Bacon looked on his method of investigating Forms as the fundamental type of the inductive process, from which in its other applications it deviated more or less according to the necessity of the case. This being understood, we may proceed to speak of the inductive method itself.

(9) The practical criterium of a Form by means of which it is to be investigated and recognised, reduces itself to this,—that the form nature and the phenomenal nature (so to modify, for the sake of distinctness, Bacon's phraseology) must constantly be either both present or both absent; and moreover that when either increases or decreases, the other must do so too [30]. Setting aside the vagueness of the second condition, it is to be observed that there is nothing in this criterium to decide which of two concomitant natures is the Form of the

[27] For an explanation of which, see note to De Augmentis, iii. 4.—*J. S.*

[28] See, in illustration of this, Nov. Org. ii. 5.

[29] Vide supra, § 2.

[30] Nov. Org. ii. 4, 13, 16.

other. It is true that in one place Bacon requires the form nature, beside being convertible with the given one, to be also a limitation of a more general nature. His words are "natura alia quæ sit cum naturâ datâ convertibilis et tamen sit limitatio naturæ notioris instar generis veri"[31]. Of this the meaning will easily be apprehended if we refer to the case of heat, of which the form is said to be a kind of motion—motion being here the natura notior, the more general natura, of which heat is a specific limitation; for wherever heat is present there also is motion, but not vice versâ. Still the difficulty recurs, that there is nothing in the practical operation of Bacon's method which can serve to determine whether this subsidiary condition is fulfilled; nor is the condition itself altogether free from vagueness.

To each of the three points of that which I have called the practical criterium of the Form corresponds one of the three tables with which the investigation commences. The first is the table "essentiæ et præsentiæ", and contains all known instances in which the given nature is present. The second is the table of declination or absence in like case (declinationis sive absentiæ in proximo), and contains instances which respectively correspond to those of the first table, but in which, notwithstanding this correspondence, the given nature is absent. The third is the table of degrees or comparison (tabula graduum sive tabula comparativæ), in which the instances of the given nature are arranged according to the degree in which it is manifested in each.

It is easy to see the connexion between these tables, which are collectively called tables of appearance, "comparentiæ," and the criterium. For, let any instance in which the given nature is present (as the sun in the case of heat, or froth in the case of whiteness) be resolved into the natures by the aggregation of which our idea of it is constituted; one of these natures is necessarily the form nature, since this is always to be present when the given nature is. Similarly, the second table corresponds to the condition that the Form and the given nature are to be absent together, and the third to that of their increasing or decreasing together.

After the formation of these tables, how is the process of induction to be carried into effect? By a method of exclusion. This method is the essential point of the whole matter, and it will be well to show how much importance Bacon attached to it.

In the first place, wherever he speaks of ordinary induction and of his own method he always remarks that the former proceeds "per enumerationem simplicem", that is, by a mere enumeration of particular cases, while the latter makes use of exclusions and rejections. This is the fundamental character of his method, and it is from this that the circumstances which distinguish it from ordinary induction necessarily follow. Moreover we are told that whatever may be the privileges of higher intelligences, man can only in one way advance to a knowledge of Forms: he is absolutely obliged to proceed at first by negatives, and then only can arrive at an affirmative when the process of exclusion has been completed (post omnimodam exclusionem)[32]. The same doctrine is taught in the exposition of the fable of Cupid. For according to some of the mythographi Cupid comes forth from an egg whereon Night had brooded. Now Cupid is the type of the primal nature of things; and what is said of the egg hatched by Night refers, Bacon affirms, most aptly to the demonstrations whereby our knowledge of him is obtained; for knowledge obtained by exclusions and negatives results, so to speak, from darkness and from night. We see, I think, from this allegorical fancy, as clearly as from any single passage in his writings, how firmly fixed in his mind was the idea of the importance, or rather of the necessity, of using a method of exclusion.

It is not difficult, on Bacon's fundamental hypothesis, to perceive why this method is of paramount importance. For assuming that each instance in which the given nature is presented to us can be resolved into (and mentally replaced by) a congeries of elementary natures, and that this analysis is not merely subjective or logical, but deals, so to speak, with the very essence of its subject

[31] Nov. Org. ii. 4. [32] Nov. Org. ii. 15.

matter, it follows that to determine the form nature among the aggregate of simple natures which we thus obtain, nothing more is requisite than the rejection of all foreign and unessential elements. We reject every nature which is not present in every affirmative instance, or which is present in any negative one, or which manifests itself in a greater degree when the given nature manifests itself in a less, or vice versâ. And this process when carried far enough will of necessity lead us to the truth; and meanwhile every step we take is known to be an approximation towards it. Ordinary induction is a tentative process, because we chase our quarry over an open country; here it is confined within definite limits, and these limits become as we advance continually narrower and narrower.

From the point of view at which we have now arrived, we perceive why Bacon ascribed to his method the characters by which, as we have seen, he conceived that it was distinguished from any which had previously been proposed. When the process of exclusion has been completely performed, only the form nature will remain; it will be, so to speak, the sole survivor of all the natures combined with which the given nature was at first presented to us. There can therefore be no doubt as to our result, nor any possibility of confounding the Form with any other of these natures. This is what Bacon expresses, when he says that the first part of the true inductive process is the exclusion of every nature which is not found in each instance where the given one is present, or is found where it is not present, or is found to increase where the given nature decreases, or vice versâ. And then, he goes on to say, when this exclusion has been duly performed, there will in the second part of the process remain, as at the bottom, all mere opinions having been dissipated (abeuntibus in fumum opinionibus volatilibus), the affirmative Form, which will be solid and true and well defined [33]. The exclusion of error will necessarily lead to truth.

Again, this method of exclusion requires only an attentive consideration of each " instantia ", in order first to analyse it into its simple natures, and secondly to see which of the latter are to be excluded—processes which require no higher faculties than ordinary acuteness and patient diligence. There is clearly no room in this mechanical procedure for the display of subtlety or of inventive genius.

Bacon's method therefore leads to certainty, and may be employed with nearly equal success by all men who are equally diligent.

In considering the only example which we have of its practical operation, namely the investigation of the form of heat [34], it is well to remark a circumstance which tends to conceal its real nature. After the three tables of Comparentia, Bacon proceeds to the Exclusiva, and concludes by saying that the process of exclusion cannot at the outset (sub initiis) be perfectly performed. He therefore proposes to go on to provide additional assistance for the mind of man. These are manifestly to be subsidiary to the method of exclusions; they are to remove the obstacles which make the Exclusiva defective and inconclusive. But in the meanwhile, and as it were provisionally, the intellect may be permitted to attempt an affirmative determination on the subject before it: " Quod genus tentamenti Permissionem Intellectûs, sive Interpretationem inchoatam, sive Vindemiationem primam, appellare consuevimus ". The phrase Permissio Intellectûs sufficiently indicates that in this process the mind is suffered to follow the course most natural to it; it is relieved from the restraints hitherto imposed on it, and reverts to its usual state. In this Vindemiatio we accordingly find no reference to the method of exclusion: it rests immediately on the three tables of Comparentia; and though of course it does not contradict the results of the Exclusiva, yet on the other hand it is not derived from them. If we lose sight of the real nature of this part of the investigation, which is merely introduced by the way " because truth is more easily extricated from error than from confusion ", we also lose sight of the scope and purport of the whole method. All that Bacon proposes henceforth to do is to perfect the Exclusiva; the Vindemiatio prima, though it is the closing member of the example which Bacon makes

[33] Nov. Org. ii. 16. [34] Nov. Org. ii. 11–20.

use of, is not to be taken as the type of the final conclusion of any investigation which he would recognise as just and legitimate. It is only a parenthesis in the general method, whereas the Exclusiva, given in the eighteenth aphorism of the second book, is a type or paradigm of the process on which every true induction (inductio vera) must in all cases depend.

It may be well to remark that in this example of the process of exclusion, the table of degrees is not made use of.

Bacon, as we have seen, admits that the Exclusiva must at first be in some measure imperfect; for the Exclusiva, being the rejection of simple natures, cannot be satisfactory unless our notions of these natures are just and accurate, whereas some of those which occur in his example of the process of rejection are ill-defined and vague[35]. In order to the completion of his method, it is necessary to remove this defect. A subsidiary method is required, of which the object is the formation of scientific conceptions. To this method also Bacon gives the name of induction; and it is remarkable that induction is mentioned for the first time in the *Novum Organum* in a passage which relates not to axioms but to conceptions[36]. Bacon's induction therefore is not a mere ἐπαγωγή, it is also a method of definition; but of the manner in which systematic induction is to be employed in the formation of conceptions we learn nothing from any part of his writings. And by this circumstance our knowledge of his method is rendered imperfect and unsatisfactory. We may perhaps be permitted to believe that so far as relates to the subject of which we are now speaking, Bacon never, even in idea, completed the method which he proposed. For of all parts of the process of scientific discovery the formation of conceptions is the one with respect to which it is the most difficult to lay down general rules. The process of establishing axioms Bacon had succeeded, at least apparently, in reducing to the semblance of a mechanical operation; that of the formation of conceptions does not admit of any similar reduction. Yet these two processes are in Bacon's system of co-ordinate importance. All commonly received general scientific conceptions Bacon condemns as utterly worthless[37]. A complete change is therefore required; yet of the way in which induction is to be employed in order to produce this change he has said nothing.

This omission is doubtless connected with the kind of realism which runs through Bacon's system, and which renders it practically useless. For that his method is impracticable cannot I think be denied, if we reflect not only that it never has produced any result, but also that the process by which scientific truths have been established cannot be so presented as even to appear to be in accordance with it. In all cases this process involves an element to which nothing corresponds in the tables of comparence and exclusion; namely the application to the facts of observation of a principle of arrangement, an idea, existing in the mind of the discoverer antecedently to the act of induction. It may be said that this idea is precisely one of the naturæ into which the facts of observation ought in Bacon's system to be analysed. And this is in one sense true; but it must be added that this analysis, if it be thought right so to call it, is of the essence of the discovery which results from it. To take for granted that it has already been effected is simply a petitio principii. In most cases the mere act of induction follows as a matter of course as soon as the appropriate idea has been introduced. If, for instance, we resolve Kepler's discovery that Mars moves in an ellipse into its constituent elements, we perceive that the whole difficulty is antecedent to the act of induction. It consists in bringing the idea of motion in an ellipse into connexion with the facts of observation; that is, in showing that an ellipse may be drawn through all the observed places of the planet. The mere act of induction, the ἐπαγωγή, is perfectly obvious. If all the observed places lie on an ellipse of which the sun is the focus, then every position which the planet successively occupies does so too. This inference, which is so obvious that it must have passed through the mind of the discoverer almost unconsciously, is an instance

[35] Nov. Org. ii. 19; and compare i. 15, which shows the necessity of a complete reform. [36] Nov. Org. i. 14, and comp. i. 18. [37] Nov. Org. i. 15, 16.

of induction "per enumerationem simplicem"; of which kind of induction Bacon, as we have seen, has said that it is utterly vicious and incompetent.

The word realism may perhaps require some explanation. I mean by it the opinion, which Bacon undoubtedly entertained, that for the purpose of investigation, the objects of our thoughts may be regarded as an assemblage of abstract conceptions, so that these conceptions not only correspond to realities, which is of course necessary in order to their having any value, but may also be said adequately to represent them. In his view of the subject, ideas or conceptions (notiones) reside in some sort in the objects from which we derive them; and it is necessary, in order that the work of induction may be successfully accomplished, that the process by which they are derived should be carefully and systematically performed. But he had not perceived that which now at least can scarcely be doubted of, that the progress of science continually requires the formation of new conceptions whereby new principles of arrangement are introduced among the results which had previously been obtained, and that from the necessary imperfection of human knowledge our conceptions never, so to speak, exhaust the essence of the realities by which they are suggested. The notion of an alphabet of the universe, of which Bacon has spoken more than once, must therefore be given up; it could at best be only an alphabet of the present state of knowledge. And similarly of the analysis into abstract natures on which the process of exclusion, as we have seen, depends. No such analysis can be used in the manner which Bacon prescribes to us; for every advance in knowledge presupposes the introduction of a new conception, by which the previously existing analysis is rendered incomplete, and therefore erroneous.

We have now, I think, succeeded in tracing the cause both of the peculiarities of Bacon's method, and of its practical inutility. Some additional information may be derived from an examination of the variations with which it is presented in different parts of his writings;—less however than if we could arrange his smaller works in chronological order. Nevertheless two results, not without their value, may be thus obtained; the one, that it appears probable that Bacon came gradually to see more of the difficulties which beset the practical application of his method; and the other, that the doctrine of Forms is in reality an extraneous part of his philosophy.

(10) In the earliest work in which the new method of induction is proposed, namely, the English tract entitled *Valerius Terminus*, no mention is made of the necessity of correcting commonly received notions of simple natures. The inductive method is therefore presented in its simplest form, unembarrassed with that which constitutes its principal difficulty. But when we advance from *Valerius Terminus* to the *Partis secundæ Delineatio et Argumentum*, which is clearly of a later date, we find that Bacon has become aware of the necessity of having some scientific method for the due construction of abstract conceptions. It is there said that the "pars informans", that is, the description of the new method, will be divided into three parts—the ministration to the senses, the ministration to the memory, and the ministration to the reason. In the first of these, three things are to be taught; and of these three the first is how to construct and elicit from facts a duly formed abstract conception (bona notio); the second is how the sense may be assisted; and the third, how to form a satisfactory collection of facts. He then proposes to go on to the other two ministrations.

Thus the construction of conceptions would have formed the first part of the then designed *Novum Organum*; and it would seem that this arrangement was not followed when the *Novum Organum* was actually written, because in the meantime Bacon had seen that this part of the work involved greater difficulties than he had at first supposed. For the general division into "ministrationes" is preserved in the *Novum Organum* [38], though it has there become less prominent than in the tract of which we have been speaking. In the ministration to the senses, as it is mentioned in the later work, nothing is expressly included but a good and sufficient natural and experimental historia; the theory of the formation of conceptions has altogether disappeared, and both this ministration and

[38] Nov. Org. ii. 10.

that to the memory are postponed to the last of the three, which contains the theory of the inductive process itself. We must set out, Bacon says, from the conclusion, and proceed in a retrograde order to the other parts of the subject. He now seems to have perceived that the theory of the formation of conceptions and that of the establishment of axioms are so intertwined together, that the one cannot be presented independently of the other, although in practice his method absolutely requires these two processes to be carried on separately. His view now is, that at first axioms must be established by means of the commonly received conceptions, and that subsequently these conceptions must themselves be rectified by means of the ulterior aids to the mind, the fortiora auxilia in usum intellectûs, of which he has spoken in the nineteenth aphorism of the second book. But these fortiora auxilia were never given, so that the difficulty which Bacon had once proposed to overcome at the outset of his undertaking remained to the last unconquered. The doctrine of the *Novum Organum* (that we must first employ commonly received notions, and afterwards correct them) is expressly laid down in the *De Interpretatione Naturæ Sententiæ Duodecim* [39]. Of this however the date is uncertain.

It is clear that while any uncertainty remains as to the value of the conceptions (notiones) employed in the process of exclusion, the claim to absolute immunity from error which Bacon has made on behalf of his general method must be more or less modified · and of this he seems to have been aware when he wrote the second book of the *Novum Organum* [40].

(11) Thus much of the theory of the formation of conceptions. With regard to the doctrine of Forms, it is in the first place to be observed that it is not mentioned as a part of Bacon's system, either in *Valerius Terminus* or in the *Partis secundæ Delineatio*, or in the *De Interpretatione Naturæ Sententiæ Duodecim*, although in the two last named tracts the definition of science which is found at the outset of the second book of the *Novum Organum* is in substance repeated. This definition, as we have seen, makes the discovery of Forms the aim and end of science ; but in both cases the word *form* is replaced by *causes*. It is however to be admitted that in the *Advancement of Learning*, published in 1605, Forms are spoken of as one of the subjects of Metaphysique. Their not being mentioned except ex obliquo in *Valerius Terminus* is more remarkable, because Bacon has there given a distinct name to the process which he afterwards called the discovery of the Form. He calls it the freeing of a direction, and remarks that it is not much other matter than that which in the received philosophies is termed the Form or formal cause. Forms are thus mentioned historically, but in the dogmatic statement of his own view they are not introduced at all [41].

The essential character of Bacon's philosophy, namely the analysis of the concrete into the abstract, is nowhere more prominent than in *Valerius Terminus*. It is there said " that every particular that worketh any effect is a thing compounded more or less of diverse single natures, more manifest and more obscure, and that it appeareth not to whether (which) of the natures the effect is to be ascribed " [42]. Of course the great problem is to decide this question, and the method of solving it is called " the freeing of a direction ". In explanation of this name, it is to be observed that in *Valerius Terminus* the practical point of view predominates. Every instance in which a given nature is produced is regarded as a *direction* for its artificial production. If air and water are mingled together, as in snow, foam, &c., whiteness is the result. This then is a direction for the production of whiteness, since we have only to mingle air and water together in order to produce it. But whiteness may be produced in other ways, and the direction is therefore not free. We proceed gradually to free it by rejecting, by means of other instances, the circumstances of this which are unessential : a process which is the exact counterpart of the Exclusiva of the *Novum Organum*. The instance I have given is Bacon's, who developes it at some length.

[39] Vide § viii. of this tract. [40] Nov. Org. ii. 19. [41] I refer to my preface to *Valerius Terminus* for an illustration of some of the difficulties of this very obscure tract.
[42] Val. Ter. c. 17.

Here then we have Bacon's method treated entirely from a practical point of view. This circumstance is worthy of notice because it serves to explain why Bacon always assumes that the knowledge of Forms would greatly increase our command over nature, that it " would enfranchise the power of man unto the greatest possibility of works and effects ". It has been asked what reason Bacon had for this assumption. " Whosoever knoweth any Form," he has said in the *Advancement*, " knoweth the utmost possibility of superinducing that nature upon any variety of nature ". Beyond question, the problem of superinducing the nature is reduced to the problem of superinducing the Form ; but what reason have we for supposing that the one is more easy of solution than the other ? If we knew the Form of malleability, that is, the conditions which the intimate constitution of a body must fulfil in order that it may be malleable, does it follow that we could make glass so ? So far as these questions admit of an answer, *Valerius Terminus* appears to suggest it. Bacon connected the doctrine of Forms with practical operations, because this doctrine, so to speak, represented to him his original notion of the freeing of a direction, which, as the phrase itself implies, had altogether a practical significance.

Even in the *Novum Organum* the definition of the form is made to correspond with the præceptum operandi, or practical direction [43]. The latter is to be " certum, liberum, et disponens sive in ordine ad actionem ". Now a direction to produce the Form as a means of producing the given nature is certain, because the presence of the Form necessarily determines that of the nature. It is free, because it requires only that to be done which is necessary, since the nature can never be present unless its Form is so too. Thus far the agreement between the practical and the scientific view is satisfactory. But to the third property which the practical direction is to possess, namely its being in ordine ad actionem, or such as to facilitate the production of the proposed result, corresponds the condition that the Form is to be " the limitation of a more general nature ; " that is to say, the Form presents itself as a limitation of something more general than the given nature, and as determining, not merely logically but also causatively, the existence of the latter. At this point the divergence between the practical and the scientific view becomes manifest ; practical operations do not, generally speaking, present to us anything analogous to the limitation here spoken of, and there is no reason to suppose that it is easier to see how this limitation is to be introduced than to see how the original problem, the ἐξ ἀρχῆς προκείμενον, may be solved. But this divergence seems to show that the two views are in their origin heterogeneous ; that the one contains the fundamental idea of Bacon's method, while the other represents the historical element of his philosophy. We shall however hereafter have occasion to suggest considerations which may seem to modify this conclusion.

(12) In a survey of Bacon's method it is not necessary to say much of the doctrine of prerogative instances, though it occupies the greater part of the second book of the *Novum Organum*. It belongs to the unfinished part of that work ; at least it is probable that its practical utility would have been explained when Bacon came to speak of the Adminicula Inductionis.

Twenty-seven kinds of instances are enumerated, which are said to excel ordinary instances either in their practical or their theoretical usefulness. To the word *instance* Bacon gives a wide range of signification. It corresponds more nearly to *observation* than to any other which is used in modern scientific language.

Of some classes of these instances collections are to be made for their own sake, and independently of any investigation into particular natures. Such, for instance, are the instantiæ conformes ; Bacon's examples of which are mostly taken from comparative anatomy. One of them is the analogy between the fins of fishes, the feet of quadrupeds, and the feet and wings of birds ; another the analogy of the beak of birds and the teeth of other animals, &c [44].

[43] Nov. Org. ii. 4, which is the best comment on the dictum, Knowledge is power.

[44] Nov Org. ii. 27. It does not seem that Bacon added much to what he found in Aristotle on the subject of these analogies.

The other classes of prerogative instances have especial reference to particular investigation, and are to be collected when individual tables of comparence are formed.

It would seem from this that the theory of prerogative instances is intended to guide us in the formation of these tables. But it is difficult to see how the circumstances which give any instance its prerogative could have been appreciated à priori. An instantia crucis [45], to take the most celebrated of all, has its distinguishing character only in so far as it is viewed with reference to two contending hypotheses. In forming at the outset of an inquiry the appropriate tables, nothing would have led the interpreter to perceive its peculiar value.

This theory, whatever may be its practical utility, may supply us with new illustrations of the importance in Bacon's method of the process of exclusions.

At the head of the list—and placed there, we may presume, from the importance of the end which they promote—stand the instantiæ solitariæ, whose prerogative it is to accelerate the Exclusiva [46]. These are instances which exhibit the given nature in subjects which have nothing in common, except that nature itself, with the other subjects which present it to us. Thus the colours shown by the prism or by crystals are a solitary instance of colour, because they have nothing in common with the fixed colours of flowers, gems, &c. Whatever therefore is not independent of the particular constitution of these bodies must be excluded from the form of colour.

Next to the instantiæ solitariæ are placed the instantiæ migrantes, which show the given nature in the act of appearing or of disappearing ; as when glass, being pounded, becomes white. Of these it is said they not only accelerate and strengthen the Exclusiva, but also confine within narrow limits the Affirmative, or Form itself, by showing that it is something which is given or taken away by the observed change. A little farther on Bacon notices the danger in these cases of confounding the efficient cause with the Form, and concludes by saying " But this is easily remedied by a legitimately performed Exclusiva ".

Other remarks to the same effect might be made with reference to other classes of instances ; but these are probably sufficient.

I shall now endeavour to give an account of Bacon's views on some questions of philosophy, which are not immediately connected with the reforms he proposed to introduce.

(13) It has sometimes, I believe, been supposed that Bacon had adopted the atomic theory of Democritus. This however is by no means true ; but certainly he often speaks much more favourably of the systems of the earlier physicists and especially of that of Democritus, than of the philosophy of Plato and Aristotle. In doing this he may perhaps have been more or less influenced by a wish to find in antiquity something with which the doctrines he condemned might be contrasted. But setting this aside, it is certain that these systems were more akin to his own views than the doctrine of the schools of which Socrates may be called the founder. The problems which they proposed were essentially physical :—given certain material first principles, to determine the origin and causes of all phenomena. They were concerned, for the most part, with that which is accessible to the senses, or which would be so if the senses were sufficiently acute. In this they altogether agree with Bacon, who, though he often speaks of the errors and shortcomings of the senses, yet had never been led to consider the question which stands at the entrance of metaphysical philosophy, namely whether the subjective character of sensation does not necessarily lead to scepticism, if no higher grounds of truth can be discovered. The scepticism of Protagoras, and Plato's refutation of it, seemed to him to be both but idle subtleties. Plato, Aristotle, and their followers, were in his opinion but a better kind of sophists. What Dionysius said to Plato, that his discourse was but dotage, might fitly be applied to them all [47].

It cannot be denied, that to Bacon all sound philosophy seemed to be included in what we now call the natural sciences ; and with this view he was naturally led to prefer the atomic doctrine of Democritus to any metaphysical speculation.

[45] Nov. Org. ii. 36. [46] Nov. Org. ii. 22. [47] Redargut. Phil. et Nov. Org. i. 71.

Every atomic theory is an attempt to explain some of the phenomena of matter by means of others ; to explain secondary qualities by means of the primary. And this was what Bacon himself proposed to do in investigating the Forms of simple natures. Nevertheless he did not adopt the peculiar opinions of Democritus and his followers. In the *Novum Organum* he rejects altogether the notion of a vacuum and that of the unchangeableness of matter [48]. His theory of the intimate constitution of bodies does not, he remarks, relate to atoms properly so called, but only to the actually existing ultimate particles. Bacon cannot therefore be said to be a follower of Democritus, though he has spoken of him as being, of all the Greek philosophers, the one who had the deepest insight into nature [49].

But though Bacon was not an atomist, he was what has been called a mechanical physiologist. Leibnitz's remark that the restorers of philosophy [50] all held the principle that the properties of bodies are to be explained by means of magnitude, figure, and motion (a statement which envelopes every such theory of matter as that of Descartes, together with the old atomic doctrine), is certainly true of Bacon.

(14) The opinion which Bacon had formed as to the class of subjects which ought to be included in Summary Philosophy (the English phrase by which he renders the expression he sometimes uses, namely prima philosophia), is worthy of attention.

In the writings of Aristotle, the first philosophy denotes the science which since his time has been called metaphysic. It is the science of first principles, or as he has himself defined it, the science of that which is, as such. In the first book of the *Metaphysics* we find a proof of the necessity of having such a science, distinct from and in a manner superior to all others.

Bacon, adopting Aristotle's name, applied it differently. With him, the first philosophy is divided into two parts. Of these the first is to be a receptacle of the axioms which do not belong exclusively to particular sciences, but are common to more than one ; while the second is to inquire into the external or adventitious conditions of existences—such as the much and the little, the like and the unlike, the possible and impossible, &c.

In illustration of the contents of the first part, Bacon quotes several axioms which are applicable in more than one science. Of these the first is, "If to unequals are added equals, the sums are unequal," which is a mathematical principle, but which, Bacon says, referring to the distinction laid down by Aristotle between commutative and distributive justices, obtains also in moral science ; inasmuch as it is the rule by which distributive justice must be guided. The next is, "Things which agree with a third, agree with one another,"—which is also a mathematical principle, but yet, differently stated, forms the foundation of the theory of syllogism. Thus far Bacon's doctrine does not materially dissent from Aristotle's, who has taught the necessity of recognising in all sciences two kinds of principles, those which are proper to the subject of each science, and those which, connecting themselves with the doctrine of the categories, are common to all. The last are in his nomenclature axioms, though Bacon, following probably Ramus, who in his turn followed Cicero and the Stoics, gives a much more general sense to this word ; and it is to be remarked that Aristotle has given as an instance of an axiom the first of the two which I have quoted from Bacon, or at any rate another which is in effect equivalent to it. But most of the instances which Bacon goes on to give are of a different nature. They are not derived from the laws of thought, but on the contrary involve an empirical element, and therefore are neither self-evident nor capable of an à priori proof. Thus the axiom that "a discord resolved into a concord improves the harmony", is, Bacon says, not only true in music, but also in ethics and the doctrine of the affections. But this axiom is in its literal sense merely a result of observation, and its application to moral subjects is clearly only analogical or tropical. Again, that "the organs of the senses are

[48] Nov. Org. ii. 8: Compare Cogit. De Nat. Rerum.
[49] Nov. Org. i. 51. ; also Parm. Teles. and Dem. Phil.
[50] Namely, the Cartesians, Verulam, Hobbes, &c. See his letter to Thomasius, p. 48 of the edition of his philosophical works by Erdmann.

analogous to instruments which produce reflection ", is, Bacon says, true in perspective, and also in acoustics ; being true both of the eye and ear. Here we have a result of observation which is made to enter into two different sciences simply in virtue of the classification employed. For this axiom, if true, properly belongs to physiology, and neither to perspective nor to acoustics ; though in a secondary and derivative manner a portion of the truth it includes may be introduced into these sciences. And so on. There is however one of these axioms which is of higher authority : " Quantum naturæ nec minuitur nec augetur " ; which, Bacon says, is true not only in physics, but also in natural theology, if it be stated in a modified form ; viz. if it be said that it belongs to Omnipotence to make something out of nothing, or vice versâ. Of this axiom it may be remarked, that it is common to physics and natural theology simply because the subjects of these sciences are in some measure common to both ; wherein it differs from the Aristotelian conception of an axiom. But it is of more interest to observe that this axiom, of which the truth is derived from our notion of substance, and which can never be established by an empirical demonstration, is constantly quoted by Bacon as a principle of incontestable truth ; of which his theory of specific gravities is in some sort only an application.

The question arises both with regard to this axiom and to the others, In what manner Bacon supposed that they ought to be demonstrated ; or, if he thought they required no demonstration, in what manner he conceived that the mind apprehended their truth ? He has certainly affirmed in express terms that there can be only two ways of arriving at truth, namely syllogism and induction ; both of which are manifestly inapplicable to some at least of the principles which he includes in the philosophia prima. But whether he would have admitted that this dictum admits of exception in relation to these cases, or on the other hand had not been led to consider the nature of the difficulty which they present, we have, I think, no means of deciding. It is to be observed that the philosophia prima is spoken of as a collection (receptaculum) of axioms—a phrase which implies that it is not a science in itself, having its own principles and an independent development, but that, contrariwise, it derives from the contributions of other sciences the elements of which it is composed. Of the second part we are unable to speak more definitely than of the first. It is obviously a reflexion of the Aristotelian doctrine of the categories [51], from which, however, Bacon intended to contrast it by requiring that the " conditiones entium," which he has doubtless called transcendent from their applicability to all classes of objects, should be treated not logically but physically [52].

But then what are the questions to be resolved in this mode of treating them ? Bacon gives some examples of the discussions which ought to occupy this part of philosophy. The first is, why there is so much of one kind of substance, and so little of another—why, for instance, so much more iron in the world than gold, &c. This belongs to the inquiry " de multo et parvo ". Again, in treating " de simili et diverso ", it ought to be explained why between dissimilar species are almost always interposed others which partake of the nature of both, and form, as it were, ambiguous species—for instance, bats between birds and quadrupeds, or moss between corruption and plants, &c. The difficulty however which I have already mentioned in speaking of the other part of the philosophia prima recurs with reference to this, namely by what method were the questions here proposed to be answered ? If by induction, by induction on what data ? and if not, by what other way of arriving at truth ?

The illustrations which Bacon has given, and perhaps his way of looking at the whole subject, connect themselves with what has recently been called palætiology. The questions which Bacon proposes are questions as to how that which actually exists, and which in the present order of things will continue to exist, came into being—whether abruptly or by slow transitions, and

[51] Trendelenberg has accordingly quoted the passages in the *De Augmentis* which relate to it, in the historical part of his work on the categories.

[52] De Augmentis iii. 4.

under what agency. He seems to point, though from a distance, to discussions as to the formation of strata and the succession of species. Yet on the other hand the discussion on Like and Unlike was to include at least one portion of a different character, namely why, in despite of the maxim "similia similibus gaudent", iron does not attract iron but the magnet, nor gold gold, but quicksilver. [54]

(15) Another subject, sufficiently interesting to be here mentioned, though less connected with Bacon's general views, is the doctrine which he entertained touching the nature of the soul. He distinguishes in several parts of his writings between the animal soul, common, at least in kind, to man and to the brutes, and the immortal principle infused by the divine favour into man only [53]. To the latter he gave the name of spiraculum, which was of course suggested by the text, "Spiravit in faciem ejus spiraculum vitæ". M. Bouillet, in his edition of Bacon's philosophical works [54], condemns this doctrine of man's having two souls, and goes on to remark that Bacon was led to adopt it in deference to the opinions of the schoolmen, and that it is also sanctioned by S. Augustine. In these remarks he is much less accurate than usual; the truth being that the doctrine of the duality of the soul is condemned very strongly by S. Augustine and by the schoolmen, and that there is no doubt as to the source from which Bacon derived it, namely from the writings of Telesius. The notion of a lower soul, distinct in essence from the higher principle of man's nature, is in reality much older than Telesius. We find it for instance among the Manichees—a circumstance which makes it singular that S. Augustine should have been supposed to countenance it. Both in his work *De Ecclesiæ Dogmatibus*, and nearly in the same words in that *De Animâ*, he rejects in the most precise and accurate manner the doctrine of two distinct souls, affirming that there is but one, which is at once the principle of nutrition, of sensation, and of reason. In opposing the tenets of the Manichæans, he has more than once condemned the same doctrine, though less at length than in the works just mentioned. The schoolmen also peremptorily rejected the doctrine which M. Bouillet has affirmed that Bacon derived from them. Thus S. Thomas Aquinas says, "Impossibile est in uno homine esse plures animas per essentiam differentes sed una tantum est anima intellectiva quæ vegetativæ et sensitivæ et intellectivæ officiis fungitur" [55]. And this follows at once from the received opinion, that the soul is joined to the body as its form (ut forma unitur corpori). It would be easy to multiply citations to the same effect; but as no schoolman could venture to contradict an emphatically expressed opinion of S. Augustine, it appears unnecessary to do so [56].

Telesius of Cosenza, whom Bacon has commended as "the best of the novellists", was one of the Italian reformers of philosophy. Tennemann's remark that the reform which he attempted to introduce was but partial, as having reference only to the natural sciences, is not altogether accurate, but it describes with sufficient correctness the general character of his writings. They contain an attempt to explain all phenomena, including those of animal life, on the hypothesis of the continuous conflict and reciprocal action of two formal principles, heat and cold. His other doctrines are either subordinated to this kind of dualism, or are merely the necessary complements of a system of philosophy. In proposing to inquire into the nature and origin of the soul, he had no other end in view than to arrive at an explanation of the phenomena of sensation, voluntary motion, &c., which should be in accordance with his fundamental hypothesis. He therefore

[53] De Augmentis iv. 3. [54] Œuvres Philosophiques de Bacon, Paris, 1834.—*J. S.*

[55] S. Thom. Prim. Q. 76. a. 3. Concl.

[56] With what bold ignorance the schoolmen are sometimes spoken of is well seen in Dr. Guhrauer's preface to his edition of Leibnitz *De Principio Individui*. The sixth proposition in the *Corollarium* attached to this disputation is as follows:—"Hominis solum una est anima quæ vegetativam et sensitivam virtualiter includat." The learned Doctor declares that in this statement Leibnitz set himself in direct opposition to the schoolmen, and that it contains the germ of Leibnitz's own psychology; the statement being almost a literal transcript of that of St. Thomas Aquinas, Sum i. Q. 76. a. 3: to which I have already referred. Leibnitz scarcely thought that in following the Angelic Doctor he was protesting against scholasticism.

sets out from the physiological point of view; and in order to explain the phenomena of animal and vegetable life, refers them to an indwelling spiritus, or animal soul, which in plants resides in the bark and fibres, and in animals in the white and exsanguine parts of the body, the bones being however excepted [57]. The animal and vegetable souls are in essence alike, but the latter is "paulo quam qui in animalibus inest crassior". In both cases the origin of this anima is the same; it is educed from the seed (educta ex semine), and is to all intents as truly material as any other part of the body.

In the application of these views to the soul of man, Telesius was met by considerations of another order. The soul educed ex semine, was (like the body which it animated, and of which it was only the subtlest portion) propagated by generation; whereas it was decided by orthodox theology that souls are not ex traduce, do not pass from parent to child in the way Telesius must have supposed. The soul is a gift, which after death is to return to Him who gave it. I do not conceive that Telesius's attempt to co-ordinate this doctrine with his own views arose merely from a wish to avoid the imputation of heresy. His writings are, I think, free from that tone of mocking deference to authority by which those of many of his contemporaries are disfigured. They have, on the contrary, much of the melancholy earnestness which characterises those of his disciple Campanella. The difference between the faculties of men and brutes appeared to him to be such that merely a subtler organisation of the spiritus would be insufficient to account for it. Man's higher faculties are to be ascribed to a higher principle, and this can only be conceived of as a divinely formed soul. The question as to the relation between the two souls may be presented under two aspects, namely what are the faculties in man which ought to be ascribed to each of them? and again are these two souls wholly independent, and if not, how are they connected? The criterion by which Telesius would decide what ought to be reserved as the peculiar appanage of the divinely created soul, appears to be this—that which in man is analogous to the faculties we recognise in brutes ought to be ascribed to the principle by which they are animated and which we possess in common with them. Whatever, on the contrary, seems peculiar to man, more especially the sense of right and wrong, which is the foundation of all morality, ought to be ascribed to the principle which it is our prerogative to possess [58].

As to the connexion between the two, Telesius decides "both on grounds of human reason and from the authority of Scripture" that they cannot be wholly independent of each other, and he accordingly affirms that the divinely created soul is the Form of the whole body, and especially of the spiritus itself. That the soul is the Form of the body he could not without heresy deny [59], although he condemns Aristotle for saying so; asserting that Aristotle refers to the spiritus, and not to the true soul, with which probably he was unacquainted [60]. The tendency of these views is towards materialism; the immaterial principle being annexed to the system, as it were, ab extra. Accordingly Telesius's disciple Donius, whom Bacon has more than once referred to, omits it altogether [61].

Comparing the views of Telesius with those of Bacon, we see that in both the duality of the soul is distinctly asserted, and that in both the animal soul is merely material [62]. Our knowledge of the divinely derived principle must rest principally on revelation. Let this knowledge be drawn, he counsels us, from the same fountain of inspiration from whence the substance of the soul itself proceeded.

Bacon rejects or at least omits Telesius's formula, that this higher soul is the

[57] De Rerum Nat. v. 1. et vi. 26.

[58] De Rerum Naturâ, v. 2.

[59] The collection known as the Clementines contains an authoritative decision on this point. "Ut quisque deinceps asserere defendere aut tenere pertinaciter præsumpserit, quod anima rationalis non sit forma corporis humani per se et essentialiter tanquam hæreticus sit censendus". I quote from Vulpes on Duns Scotus, 46 a. 5. To this decision Telesius seems to allude, De Rer. Nat. v. 40. Campanella has expressly mentioned it.

[60] De Rer. Nat. v. 3.

[61] See his De Nat. Hominis.

[62] Proceeding e matricibus elementorum, De Augm. iv. 3.

Form of the body—a formula to which either in his system or that of Telesius no definite sense could be attached. He differs from his predecessor in this also, that with him the spiritus is more a physiological and less a psychological hypothesis than with Telesius—it is at least less enwrapped in a psychological system than we find it in the *De Rerum Naturâ*.

On the other hand, he has not, I think, recognised so distinctly as Telesius or Campanella the principle that to the rational soul alone is to be referred the idea of moral responsibility; and the fine passage on the contrast of public and private good in the seventh book of the *De Augmentis* seems to show (if Bacon meant that the analogy on which it is based should be accepted as anything more than an illustration) that he conceived that something akin to the distinction of right and wrong is to be traced in the workings, conscious or unconscious, of all nature.

(16) We are here led to mention another subject, on which again the views of Telesius appear to have influenced those of Bacon. That all bodies are animated, that a principle of life pervades the whole universe, and that each portion, beside its participation in the life of the world, has also its proper vital principle, are doctrines to which in the time of Bacon the majority of philosophical reformers were at least strongly inclined. The most celebrated work in which they are set forth is perhaps the *De Sensu Rerum* of Campanella. The share which it had in producing the misfortunes of his life is well known, and need not here be noticed.

In one of his letters to Thomasius [63], Leibnitz points out how easy the transition is from the language which the schoolmen held touching substantial forms and the workings of nature to that of Campanella: "Ita reditur ad tot deunculos quot formas substantiales et Gentilem prope polytheismum. Et certe omnes qui de substantiis illis incorporalibus corporum loquuntur non possunt mentem suam explicare nisi translatione a Mentibus sumptâ. Hinc enim attributus illis appetitus vel instinctus ille naturalis ex quo et sequitur cognitio naturalis, hinc illud axioma: Natura nihil facit frustra, omnis res fugit sui destructionem, similia similibus gaudent, materia appetit formam nobiliorem, et alia id genus. Quum tamen reverâ in naturâ nulla sit sapientia, nullus appetitus, ordo vero pulcher ex eo oriatur, quia est horologium Dei". To the censure implied in these remarks Aristotle is himself in some measure liable, seeing that he ascribed the various changes which go on around us to the half-conscious or unconscious workings of an indwelling power which pervades all things, and to which he gives the name of Nature. Nature does nothing in vain and of things possible realizes the best, but she does not act with conscious prevision. She is, so to speak, the instinct of the universe.

It is on account of these views that Bacon charges Aristotle with having set aside the doctrine of a providence, by putting Nature in the place of God [64]. Nevertheless Bacon himself thought it possible to explain large classes of phenomena by referring them, not certainly to the workings of Nature, but to the instincts and appetites of individual bodies. His whole doctrine of simple motions is full of expressions which it is very difficult to understand without supposing that Bacon had for the time adopted the notion of universally diffused sensation. Thus the "motus nexûs" is that in virtue of which bodies, as delighting in mutual contact, will not suffer themselves to be separated. All bodies, we are told, abhor a solution of continuity, and the rising of cream is to be explained by the desire of homogeneous elements for one another.

The distinction which Bacon has elsewhere taken between sensation and perception, which corresponds to Leibnitz's distinction between apperception and perception, does not appear to accord with these expressions. He there asserts that inanimate bodies have perception without sensation. But such words as *desrie* and *horror* imply not only a change worked in the body to which they are applied in virtue of the presence of another, but also a sense of that presence,—that is, in Bacon's language, not only perception but sensation.

The contrast between the expressions I have quoted and those of which he made use in other parts of his writings, is remarkable. In stating the doctrine of

[63] P. 48. of Erdmann's edition of his philosophical works.
[64] De Aug. iii. 4.

simple motions, he speaks as if all phenomena were to be explained by means of the desires and instincts of matter, every portion of which is more or less consciously sentient. But in other passages we find what at first appears to be a wholly different view, namely that phenomena are to be explained by the site, form, and configuration of atoms or ultimate particles, capable neither of desire nor fear, and in all their motions simply fulfilling the primary law impressed on them by Providence.

Nevertheless there is here no real inconsistency. For Bacon, following Telesius, ascribed all the phenomena of animal life to the spiritus, which, though it is the subtlest portion of the body which it animates, is notwithstanding as truly material as any other part. In every body, whether animated or not, dwells a portion of spirit, and it was natural therefore to ascribe to it some share of the powers which the more finely constituted spirits of animals were supposed to possess. How far however this analogy between animate and inanimate bodies ought to be carried, was a doubtful question ; and we need not be surprised to find that Bacon sometimes denies and sometimes appears to admit that the latter as well as the former are, to a certain extent at least, consciously sentient. But in all cases he proposed to explain the phenomena of animal life by means of the ultimate constitution of matter. Thus such phenomena as the rising of cream, the subsidence of the lees of wine, the clinging of gold leaf round the finger, &c., were to be explained in the first instance by the instincts and appetites of portions of matter, and afterwards to receive a deeper and more fundamental explanation when these instincts and appetites were themselves shown to result from the site, form, and configuration of the ultimate particles of which all bodies are composed.

To the doctrine of universally diffused sensation, so far as he adopted it, Bacon was led by the writings of many of his contemporaries, and in particular by those of Telesius. Brucker has remarked, and with perfect truth, that this doctrine is stated as distinctly, though not so conspicuously, by Telesius as by Campanella. Added to which this doctrine serves to explain phenomena of which, without it, no explanation could readily be given. Thus Bacon is much disposed to ridicule Gilbert for the pains he had bestowed on the subject of electrical attraction, affirming that it is merely the result of the power which friction possesses to excite the appetite of bodies for contact. This appetite " aerem non bene tolerat, sed aliud tangibile mavult ".

(17) Bacon's opinion as to Final Causes has often been discussed. It seems however scarcely necessary to refute the interpretation which on no just grounds has been given to the phrase, "causarum finalium inquisitio tanquam virgo Deo consecrata nihil parit [65] ". Nihil parit, as the context plainly shows, [means simply *non parit opera*] [66]. Bacon is speaking of the classification of physics and metaphysics—the one being the science of the material and efficient cause, and the other containing two parts, namely the doctrine of forms and the doctrine of final causes. To physics corresponds in practical application mechanica or mechanics—to metaphysics, magia or natural magic. But magia corresponds to metaphysique because the latter contains the doctrine of Forms ; that of final causes admitting from its nature of no practical application. It is this idea which Bacon has expressed by saying that the doctrine in question is, as it were, a consecrated virgin.

It is not sufficiently remarked that final causes have often been spoken of without any reference to a benevolent intention. When it is said that the final cause of a stone's falling is " locus deorsum," the remark is at least but remotely connected with the doctrine of an intelligent providence. We are to remember that Bacon has expressly censured Aristotle for having made use of final causes without referring to the fountain from which they flow, namely the providence of the Creator. And in this censure he has found many to concur.

Again, in any case in which the benevolent intention can be perceived, we are at liberty to ask by what means and according to what laws this benevolent in-

[65] De Augm. iii. 5. See note on the place.—*J.S.* [66] I have supplied these words to complete the sentence, which ends abruptly at the bottom of a page, a fresh page having apparently been substituted for that which originally followed—*J. S.*

tention is manifested and made efficient. If this question is not to be asked, there is in the first place an end of physical science, so far as relates to every case in which a benevolent intention has been or can be recognised ; and in the second, the argument à posteriori founded on the contrivance displayed in the works of creation is entirely taken away.

This is, in effect, what Bacon says in the passage of the *De Augmentis* in which he complains of the abuse of final causes. If, he affirms, the physical cause of any phenomenon can be assigned as well as the final, so far is this from derogating from our idea of the divine wisdom, that on the contrary it does but confirm and exalt it. "Dei sapientia effulget mirabilius cum natura aliud agit, providentia aliud elicit, quam si singulis schematibus et motibus naturalibus providentiæ characteres essent impressi[67]." And a little farther on he expresses an opinion which we shall do well always to remember, namely that so far is the study of physical causes from withdrawing men from God and providence, that on the contrary those who have occupied themselves in searching them out have never been able to find the end of the matter without having recourse at length to the doctrine of divine providence.

In one respect Bacon seems to have overlooked the advantage which is to be derived from the study of final causes. In the sciences which relate to animal and vegetable life, the conviction that every part of the organisation has its appropriate function which conduces to the well-being of the whole, serves not only to direct our thoughts to the wisdom of the Creator, but also to guide our investigation into the nature of the organisation itself.

(18) It will now, I think, be well to attempt to arrange the fundamental ideas of Bacon's system in the order in which, as we may conceive, they presented themselves to his mind. To do this will necessarily involve some degree of repetition ; but it will enable us to form a better idea of the scope and spirit of his philosophy.

When, at the outset of his philosophical life, he looked round on the visible universe, it would seem that to him the starry heavens, notwithstanding the grandeur of the spectacle they present to us, were of less interest than things on earth. The stars in their courses declare the glory of God ; but, excepting the great lights which rule the day and night, they exert no conspicuous influence on the welfare of mankind. And on the other hand it is certain that we can in nowise affect the causes by which these phenomena are produced. But on the earth beneath, and in the waters under the earth, Nature is perpetually working in ways which it is conceivable that we may be able to imitate, and in which the beneficence of the Creator, wherein His glory is to us chiefly visible, is everywhere to be traced. Wherever we turn, we see the same spectacle of unceasing and benevolent activity. From the seed of corn Nature develops the stalk, the blade, and the ear, and superinduces on the yet immature produce the qualities which make it fit for the sustenance of man. And so, too, animal life is developed from its first rudiments to all the perfection which it is capable of attaining. And though this perfection is necessarily transitory, yet Nature, though she cannot perpetuate the individual, yet continues the species by unceasing reproduction.

But the contemplation of God's works, glorious as they are, is not the whole of man's business here on earth. For in losing his first estate he lost the dominion over the creatures which was its highest privilege, and ever since has worn out few and evil days, exposed to want, sickness, and death. His works have all been vanity and vexation of spirit, his labour nearly profitless, his knowledge for the most part useless. Is his condition altogether hopeless, or may it not be possible to soften, though not to set aside, the effects of the primal curse ? To this question Bacon unhesitatingly made answer, that of His great mercy God would bless our humble endeavours to restore to suffering humanity some part at least of what it had lost ; and thus he has more than once described the instauration of the sciences as an attempt to regain, so far as may be, that of which the Fall deprived us.

A deep sense of the misery of mankind is visible throughout his writings. The principal speaker in the *Redargutio Philosophiarum*, and the son [father] of Solomon's House in the *New Atlantis*, both express Bacon's idea of what the philos-

[67] De Aug. iii. 4.

opher ought to be; and of both it is said that their countenance was as the countenance of one who pities men. Herein we see the reason why Bacon has often been called an utilitarian; not because he loved truth less than others, but because he loved men more.

The philosopher is therefore not merely to contemplate the works of the Creator, but also to employ the knowledge thus obtained for the relief of man's estate. If we ask how this is to be done, we find, Bacon tells us (and here he still seems to recur to the idea that the new philosophy is to be in some sort a restoration to man of his original condition), that as no one can enter into the kingdom of heaven "nisi sub personâ infantis," so, too, in order to obtain a real and fruitful insight into Nature, it is necessary to become as a little child, to abnegate received dogmas and the idols by which the mind is most easily beset, and then to follow with child-like singleness of purpose the indications which Nature gives us as to how her operations are performed. For we can command Nature only by obeying her; nor can Art avail anything except as Nature's handmaiden. We can affect the conditions under which Nature works; but things artificial as well as things natural are in reality produced not by Art but Nature. Our power is merely based upon our knowledge of the procedure which Nature follows. She is never really thwarted or controlled by our operations, though she may be induced to depart from her usual course, and under new and artificial conditions to produce new phenomena and new substances.

Natural philosophy, considered from this point of view, is therefore only an answer to the question, How does Nature work in the production of phenomena? When, to take a trivial instance, she superinduces yellowness on the green leaf, or silently and gradually transforms ice into crystal, we ask how are these changes brought about?—what conditions are necessary and sufficient in order that the phenomena we observe may be engendered? If we knew what these conditions are, we might ourselves be able to determine their existence, and then the corresponding phenomena would necessarily follow, since the course of Nature is absolutely uniform.

At this point of the development of Bacon's system, the question of method would naturally present itself to him. Having determined what the object of our inquiries is to be, we must endeavour to find a way of attaining it.

For this end Bacon, as we have seen, proposes to examine all the cases in which the phenomenon to be reproduced has been observed, and to note all the conditions which in each case accompany its production. Of all these those only can be necessary which are universally concomitant. Again he proposes to observe all the cognate cases in which, though certain of the conditions before mentioned are present, they are not accompanied by the required phenomenon. By these two classes of observations all the superfluous conditions may be rejected, and those which remain are what we seek. Wherever we can determine their existence we can produce the phenomenon in question.

This process is what Bacon calls, in *Valerius Terminus*, the freeing of a direction, and in his later writings the investigation of the Form.

His thinking that this process would in all cases, or even generally, be successful, arose from his not having sufficiently appreciated the infinite variety and complexity of Nature. Thus he strongly condemns as most false and pernicious the common opinion that the number of individual phenomena to be observed is sensibly infinite, and commends Democritus (a commendation which seems rather to belong to Lucretius) for having perceived that the appearance of limitless variety which the first aspect of Nature presents to us disappears on a closer inspection.

The transition from this view of Nature to the idea that it was possible to form an alphabet of the universe, and to analyse all phenomena into their real elements, is manifestly easy.

By the new method of induction it would be possible to ascertain the conditions requisite and sufficient for the production of any phenomenon; and as this determination was meant chiefly to enable us to imitate Nature, or rather to direct her operations, Bacon was naturally led to assume that the conditions in question would be such that it would in all cases be possible to produce them artificially.

Now the power of man is limited to the relations of space. He brings bodies together; he separates them; but Nature must do the rest. On the other hand the conditions of the existence of any phenomenon must be something which inheres more closely in the essence of the substance by which that phenomenon is exhibited than the phenomenon itself. And this something is clearly the inward configuration of the substance; that is, the form and arrangement etc. of its ultimate particles. Whiteness, for instance, depends on an even arrangement of these particles in space; and herein we perceive a perfect analogy between what man can do and what Nature requires to be done. The familiar processes of the arts consist simply in giving particular forms to portions of matter, in arranging them and setting them in motion according to certain rules. Between arranging stones so as to form a house, and arranging particles so as to produce whiteness, there is no difference but that of scale. So in other cases. The difference of scale once set aside, it seemed to follow that the knowledge of the Form would in all cases lead to great practical results.

Thus far of the end which the new philosophy proposes to itself, and of the method which it must employ. The next question relates to the mode of procuring and arranging the materials on which this method is to work. In this part of the subject we again perceive the influence of Bacon's opinion touching the limitedness of Nature. No one acquainted with the history of natural philosophy would think it possible to form a collection of all the facts which are to be the materials on which any science is to operate, antecedently to the formation of the science itself.

In the first place, the observations necessary in order to the recognition of these facts would never have been made except under the guidance of some preconceived idea as to the subject of observation; and in the second, the statement which embodies the result of observation always involves some portion of theory. According to the common use of language, it is a fact and not a theory that in ordinary refraction the sine of the angle of incidence is to the sine of the angle of refraction in a given ratio. But the observations on which this statement is based, and the statement itself, presuppose the recognition of a portion of the theory of light, namely that light is propagated in straight lines—in other words they presuppose the conception of a ray. Nor would these observations have been made but for the idea in the mind of the observers that the magnitude of the angle of refraction depends on that of the angle of incidence.

As we advance farther in any science, what we call facts involve more and more of theory. Thus it is a fact that the tangent of the angle of polarisation is equal to the index of refraction. But no one could have made the observations which prove it, or have stated their result in words, without a distinct conception, first of the law of refraction, and secondly of the distinguishing character of polarised light.

The history of science and the nature of the case concur in showing that observation and theory must go on together;—it is impossible that the one can be completed before the other begins. Now although Bacon did not think that observation and experiments might altogether be laid aside when once the process of interpretation had begun (we see on the contrary that one of the works of Solomon's House was the trying of experiments suggested by previously obtained conclusions), he certainly thought it possible so to sever observation from theory that the process of collecting facts and that of deriving consequences from them might be carried on independently and by different persons. This opinion was based on an imperfect apprehension of the connection between facts and theories; the connection appearing to him to be merely an external one, namely that the former are the materials of the latter. With these views that which has been already noticed touching the finiteness of Nature, namely that there are but a finite and not very large number of things which for scientific purposes require to be observed [68], is altogether in accordance.

The facts on which the new philosophy was to be based being conceivable apart from any portion of theory, and moreover not excessively numerous, they might

[68] See the Phænomena Universi, and the Partis secundæ Del., &c.

be observed and recorded within a moderate length of time by persons of ordinary diligence.

If this registering of facts were made a royal work, it might, Bacon seems to have thought, be completed in a few years: he has at least remarked that *unless* this were done, the foundation of the new philosophy could not be laid in the life-time of a single generation. The instauration, he has said in the general preface, is not to be thought of as something infinite and beyond the power of man to accomplish; nor does he believe that its mission can be fully completed (rem omnino perfici posse) within the limits of a single life. Something was therefore left for posterity to do; and probably the more Bacon meditated on the work he had in hand, the more was he convinced of its extent and difficulty. But the *Distributio Operis* sufficiently shows that he believed, when he wrote it, that the instauration of the sciences might speedily become an opus operatum. Of the *Historia Naturalis* on which it was to be based he there speaks, not less than of the *Novum Organum*, as of a work which he had himself accomplished,—" Tertia pars operis complectitur Phænomena Universi",—not " complecti debet". Doubtless the preface was written before the work itself was commenced; still if he had not thought it possible to make good what he here proposes to do, he would have expressly said so [69].

In a letter to Fulgenzio, written probably when Bacon was " dagli anni e da fortuna oppresso", he remarks that " these things " (the instauration of the sciences) require some ages for the ripening of them. But though he despaired of completing his design himself, and even thought that some generations must pass before it received its consummation, yet he always regarded it as a thing which sooner or later would be effectually accomplished, and which would thenceforth remain as a κτῆμα ἐς ἀεί. His instauration of the sciences had a definite end, in which when it was once attained it would finally acquiesce; nor is there anything in his writings to countenance the assumption which has been often made, that in his opinion the onward progress of knowledge was to continue throughout all time. On the contrary, the knowledge which man is capable of might, he thought, be attained, not certainly at once, but within the compass of no very long period. In this doubtless he erred; for knowledge must always continue to be imperfect, and therefore in its best estate progressive.

Bacon has been likened to the prophet who from Mount Pisgah surveyed the Promised Land, but left it for others to take possession of. Of this happy image perhaps part of the felicity was not perceived by its author. For though Pisgah was a place of large prospect, yet still the Promised Land was a land of definite extent and known boundaries, and moreover it was certain that after no long time the chosen people would be in possession of it all. And this agrees with what Bacon promised to himself and to mankind from the instauration of the sciences.

A truer image of the progress of knowledge may be derived from the symbol which, though on other grounds, Bacon himself adopted. Those who strive to increase our knowledge of the outward universe may be said to put out upon an apparently boundless sea; they dedicate themselves

" To unpathed waters—undreamed shores ";

and though they have a good hope of success, yet they know they can subdue but a small part of the new world which lies before them.

(19) In this respect, then, as in others, the hopes of Francis Bacon were not destined to be fulfilled. It is neither to the technical part of his method nor to the details of his view of the nature and progress of science that his great fame is justly owing. His merits are of another kind. They belong to the spirit rather than to the positive precepts of his philosophy.

He did good service when he declared with all the weight of his authority and of his eloquence that the true end of knowledge is the glory of the Creator and the relief of man's estate. The spirit of this declaration runs throughout his writings,

[69] The sixth part containing the new philosophy itself is spoken of at the end of the *Distributio* as at least an inchoate work, which others must finish, but to which he hopes to give " initia non contemnenda ".

and we trust has worked for good upon the generations by which they have been studied. And as he showed his wisdom in coupling together things divine and human, so has he shown it also in tracing the demarcation between them, and in rebuking those who by confounding religion and philosophy were in danger of making the one heretical and the other superstitious.

When, not long before Bacon's time, philosophy freed itself from the tutelage of dogmatic theology, it became a grave question how their respective claims to authority might be most fitly co-ordinated. It was to meet, perhaps rather to evade, this question, that the distinction between that which is true in philosophy and that which is true in religion was proposed and adopted. But it is difficult to believe that the mind of any sincere and truth-loving man was satisfied by this distinction. Bacon has emphatically condemned it. "There is," he affirms, "no such opposition between God's word and his works". Both come from him who is the father of lights, the fountain of all truths, the author of all good ; and both are therefore to be studied with diligence and humility. To those who wish to discourage philosophy in order that ignorance of second causes may lead men to refer all things to the immediate agency of the first, Bacon puts Job's question, "An oportet mentiri pro Deo,"—will you offer to the God of truth the unclean sacrifice of a lie ?

The religious earnestness of Bacon's writings becomes more remarkable when we contrast it with the tone of the most illustrious of his contemporaries. Galileo's works are full of insincere deference to authority and of an affected disbelief in his own discoveries. Surely he who loves truth earnestly will be slow to believe that the cause of truth is to be served by irony. But we must not forget the difference between the circumstances in which the two men were placed.

Next to his determination of the true end of natural philosophy and of the relation in which it stands to natural and to revealed theology, we may place among Bacon's merits his clear view of the essential unity of science. He often insists on the importance of this idea, and has especially commended Plato and Parmenides for affirming "that all things do by scale ascend to unity". The Creator is holy in the multitude of his works, holy in their disposition, holy in their unity : it is the prerogative of the doctrine of Forms to approach as nearly as possible towards the unity of Nature, and the subordinate science of Physics ought to contain two divisions relating to the same subject. One of these ought to treat of the first principles which govern all phenomena,and the other of the fabric of the universe [70]. All classifications of the science ought to be as veins or markings, and not as sections or divisions ; nor can any object of scientific inquiry be satisfactorily studied apart from the analogies which connect it with other similar objects.

But the greatest of all the services which Bacon rendered to natural philosophy was, that he perpetually enforced the necessity of laying aside all preconceived opinions and learning to be a follower of Nature. These counsels could not to their full extent be followed, nor has he himself attempted to do so. But they contain a great share of truth, and of truth never more needful than in Bacon's age. Before his time doubtless the authority of Aristotle, or rather that of the scholastic interpretation of his philosophy, was shaken, if not overthrown. Nevertheless the systematising spirit of the schoolmen still survived ; and of the reformers of philosophy not a few attempted to substitute a dogmatic system of their own for that from which they dissented.

Nor were these attempts unsuccessful. For men still leaned upon authority, and accepted as a test of truth the appearance of completeness and sicentific consistency. This state of things was one of transition ; and probably no one did more towards putting an end to it than Bacon. To the dealers in systems and to their adherents he opposed the solemn declaration, that they only who come in their own name will be received of men. He constantly exhorted the seeker after truth to seek it in intercourse with Nature, and has repeatedly professed that he was no founder of a sect or school. He condemned the arrogance of those who thought it beneath the dignity of the philosopher to dwell on matters of observa-

[70] The latter is in effect what is now called Kosmos.

tion and experiment, and reminded them that the sun "æque palatia et cloacas ingreditur; nec tamen polluitur". We do not, he continues, erect or dedicate to human pride a capitol or a pyramid; we lay the foundations in the mind of man of a holy temple, whereof the exemplar is the universe. Throughout his writings the rejection of systems and authority is coupled with the assertion, that it is beyond all things necessary that the philosopher should be an humble follower of Nature. One of the most remarkable parts of the *Novum Organum* is the doctrine of Idola. It is an attempt to classify according to their origin the false and ill-defined notions by which the mind is commonly beset. They come, he tells us, from the nature of the human mind in general, from the peculiarities of each man's individual mind, from his intercourse with other men, from the formal teaching of the received philosophies. All these must be renounced and put away, else no man can enter into the kingdom which is to be founded on the knowledge of Nature [71]. Of the four kinds of idols Mersenne has spoken in his *Vérité des Sciences*, published in 1625, as of the four buttresses of the *Organum* of Verulam. This expression, though certainly inaccurate, serves to show the attention which in Bacon's time was paid to his doctrine of idola [72].

His rejection of syllogistic reasoning, in the proposed process for the establishment of axioms, was not without utility. In the middle ages and at the reform of philosophy the value of the syllogistic method was unduly exalted. Bacon was right in denying that it was possible to establish by a summary process and à priori the first principles of any science, and thence to deduce by syllogism all the propositions which that science could contain; and though he erred in rejecting deductive reasoning altogether, this error could never have exerted any practical influence on the progress of science, while the truth with which it was associated was a truth of which his contemporaries required at least to be reminded. The reason of his error seems to have been that he formed an incorrect idea of the nature of syllogism, regarding it rather as an entirely artificial process than as merely a formal statement of the steps necessarily involved in every act of reasoning. However this may be, it is certain that whenever men attempted to set aside every process for the discovery of truth except induction, they must always have been led to recognise the impossibility of doing so.

Lastly, the tone in which Bacon spoke of the future destiny of mankind fitted him to be a leader of the age in which he lived. It was an age of change and hope. Men went forth to seek in new-found worlds for the land of gold and for the fountain of youth; they were told that yet greater wonders lay within their reach. They had burst the bands of old authority; they were told to go forth from the cave where they had dwelt so long, and look on the light of heaven. It was also for the most part an age of faith; and the new philosophy upset no creed, and pulled down no altar. It did not put the notion of human perfectibility in the place of religion, nor deprive mankind of hopes beyond the grave. On the contrary, it told its followers that the instauration of the sciences was the free gift of the God in whom their fathers had trusted—that it was only another proof of the mercy of him whose mercy is over all his works.

[71] Nov. Org. i. 68. The word idolon is used by Bacon in antithesis to idea. He does not mean by it an idol or false object of worship. [72] Compare Gassendi, Inst. Log.

The two Books of Francis Bacon of the Proficience and Advancement of Learning Divine and Human

PREFACE.

BY JAMES SPEDDING.

THE first edition of the *Advancement of Learning* is dated 1605. In what month it appeared is doubtful; but from certain allusions in a letter sent by Bacon to Tobie Matthew with a presentation copy, I gather (for the letter bears no date) that it was not out before the latter end of October.

Tobie Matthew, eldest son of the Bishop of Durham, was then about 27 years old, and had been intimate with Bacon, certainly for the last three years, and probably for more. Bacon had a high opinion of his abilities and seems to have consulted him about his works. "I have now at last (he says in this letter) taught that child to go, at the swaddling whereof you were. My work touching the *Proficiency and Advancement of Learning* I have put into two books, whereof the former, which you saw, I account but as a Page to the latter. I have now published them both, whereof I thought it a small adventure to send you a copy, who have more right to it than any man, except Bishop Andrews, who was my Inquisitor [1]."

Now Matthew had been abroad since April, 1605; and as he had seen the first book only, it is probable that the second was not then written; a circumstance which may be very naturally accounted for, if I am right in supposing that the *Advancement of Learning* was begun immediately after the accession of James I. From the death of Elizabeth, 24th March, 1602–3, to the meeting of James's first Parliament, 19th March, 1603–4, Bacon had very little to do. He held indeed the same place among the Learned Counsel which he had held under Elizabeth, but his services were little if at all used. On the 3rd of July, 1603, we find him writing to Lord Cecil:—"For my purpose or course, I desire to meddle as little as I can in the King's causes, his Majesty now abounding in counsel. . . . My ambition now I shall only put upon my pen, whereby I shall be able to maintain memory and merit of the times succeeding." And in the trial of Sir Walter Raleigh at Winchester the following November (though it was a complicated case involving many persons and requiring a great number of examinations) he does not appear to have been employed at all. But from the meeting of Parliament in March till the end of 1604 he was incessantly employed; first during the session (which lasted till the 7th of July) in the business of the House of Commons; then during the vacation, in preparation for the Commission of the Union [2] which was to meet in October; and from that time to the beginning of December in the business of the Commission itself;—all matters of extreme urgency and importance, and the "labour whereof, for men of his profession, rested most upon his hand" [3].

[1] Sir Tobie Matthew's collection of English letters, p. xi. Andrews was made a Bishop on the 3rd of November, 1605.

[2] See "Certain Articles or Considerations touching the union of the Kingdoms of England and Scotland; collected and dispersed for His Majesty's better service".

[3] Letter to the King, touching the Solicitor's place.

On the 4th of December the Commissioners signed their report; and on the 24th the next meeting of Parliament, which had been fixed for February, was postponed till October. This prorogation secured Bacon another interval of leisure; an interval longer perhaps, considering the nature of the public services which had now fallen upon him, than he was likely soon again to enjoy; and which it was the more important therefore to use in finishing the great literary work which he had begun. The same consideration may have determined him to be content with a less perfect treatment of the subject than he had originally designed; for certainly the second book, though so much the more important of the two, is in point of execution much less careful and elaborate than the first, and bears many marks of hasty composition. The presumption that an interval occurred between the writing of the two is further confirmed by the fact that they were not printed at the same time. The first ends with a half-sheet, and the second begins upon a fresh one with a new signature; whence I suppose we may infer that the first had been printed off before the second was ready for the press.

Of the motives which induced Bacon to undertake and hurry forward the *Advancement of Learning* at that particular time, and of those which afterwards suggested the incorporation of it into his great work on the Interpretation of Nature, I have explained my own view in my preface to the *De Augmentis.* Upon all matters requiring explanation or illustration the reader is referred to Mr. Ellis's notes upon the corresponding passages in that more finished work; and that the reference may be more easy I have marked the places where the several chapters begin; adding some account, more or less complete, of the principal differences between the two. In many cases these differences are so extensive that no adequate idea of their nature could be given within the limits of a note; and in such cases I have been content with a simple reference to the place. But where the substance of any addition or alteration which seemed to me material could be stated succinctly, — especially if it involved any modification of the opinion expressed in the text, — I have generally endeavoured to state it; sometimes translating Bacon's words, sometimes giving the effect in my own, as I found most convenient.

For the text, I have treated the edition of 1605 as the only original authority; the corrections introduced by later editors, though often unquestionably right, being (as far as I can see) merely conjectural. And therefore, though I have adopted all such corrections into the text whenever I was satisfied that they give the true reading, I have always quoted in a note the reading of the original. Only in the typographical arrangement with respect to capitals, italics, etc. (which in the original was probably left to the printer's taste, and is inconsistent in itself, and would be perplexing to modern eyes) and also in the punctuation, which is extremely confused and inaccurate, I have used the full liberty of my own judgment; altering as much as I pleased, and endeavouring only to make the sense clear to an eye accustomed to modern books, without encumbering the page with any notice of such alterations.

There is one innovation however which I have ventured to introduce and which it is necessary to explain. The *Advancement of Learning* was written for readers who were familiar with Latin, and abounds with Latin quotations. In these days it may be read with profit by many persons of both sexes to whom such quotations are a very perplexing obstruction. Forming as they generally do a part of the context, so that the sentence is not complete without them, those who cannot read Latin are in many cases unable to follow the sense of the English. To give such readers the means of understanding them seemed therefore no less than necessary; and I thought the true effect of them would be conveyed to the mind most perfectly and satisfactorily by presenting the interpretations in such a form that they might be read in their places, just as they would have been had they formed part of the original text, and just as they are in those passages where Bacon has himself furnished the interpretation. Following his example therefore as nearly as I could, I have endeavoured to give the effect of each of these Latin quotations in such a form as seemed to suit best the English idiom and to fall best into the English context; not tying myself to

literal translation, but rather preferring to vary the expression, especially where I could by that means give it such a turn as to throw the emphasis more distinctly upon that part of the quotation which was more particularly in point. Thus it will be found, I think, that those who understand the Latin may still read the English without feeling it to be a mere repetition, while those who do not will in reading the English alone find the sense always complete. It was evident however that translations of this kind could not be read in this way conveniently if inserted in notes at the bottom of the page; and therefore, there being no room in the margin, I have ventured to insert them in the text; from which however, that they may not be mistaken for a part of it, I have always taken care to distinguish them by brackets. In a few cases where a Latin quotation occurs, not followed by a translation within brackets, it is to be understood that it is introduced merely as a voucher for what has just been said in the English, or for the purpose of suggesting a classical allusion which a translation would not suggest except to a classical reader, and that the sense is complete without it. In a few other cases where a quotation is followed by a translation *not* included within brackets, it is to be understood that it is Bacon's own translation and forms part of the original text.

For all the notes except those signed *R. L. E.*, which are Mr. Ellis's, I am responsible.

J. S.

THE FIRST BOOK

TO THE KING.

THERE were under the Law (excellent King) both daily sacrifices and freewill offerings; the one proceeding upon ordinary observance, the other upon a devout cheerfulness. In like manner there belongeth to kings from their servants both tribute of duty and presents of affection. In the former of these I hope I shall not live to be wanting, according to my most humble duty, and the good pleasure of your Majesty's employments: for the later, I thought it more respective to make choice of some oblation which might rather refer to the propriety and excellency of your individual person, than to the business of your crown and state.

Wherefore representing your Majesty many times unto my mind, and beholding you not with the inquisitive eye of presumption to discover that which the Scripture telleth me is inscrutable, but with the observant eye of duty and admiration; leaving aside the other parts of your virtue and fortune, I have been touched, yea and possessed, with an extreme wonder at those your virtues and faculties which the philosophers call intellectual; the largeness of your capacity, the faithfulness of your memory, the swiftness of your apprehension, the penetration of your judgment, and the facility and order of your elocution: and I have often thought that of all the persons living that I have known, your Majesty were the best instance to make a man of Plato's opinion, that all knowledge is but remembrance,* and that the mind of man by nature knoweth all things, and hath but her own native and original notions [1] (which by the strangeness and darkness of this tabernacle of the body are sequestered) again revived and restored: such a light of nature I have observed in your Majesty, and such a readiness to take flame and blaze from the least occasion presented, or the least spark of another's knowledge delivered. And as the Scripture saith of the wisest king, *That his heart was as the sands of the sea*; which though it be one of the largest bodies yet it consisteth of the smallest and finest portions; so hath God given your Majesty a composition of understanding admirable, being able to compass and comprehend the greatest matters, and nevertheless to touch and apprehend the least; whereas it should seem an impossibility in nature for the same instrument to make itself fit for great and small works. And for your gift of speech, I call to mind what Cornelius Tacitus saith of Augustus Cæsar; *Augusto profluens, et quæ principem deceret, eloquentia fuit*; [that his style of speech was flowing and prince-like [2]:] for if we note it well, speech that is uttered with labour and difficulty, or speech that savoureth of the affectation of art and precepts, or speech that is framed after the imitation of some pattern of eloquence, though never so excellent,— all this has somewhat servile, and holding of the subject. But your Majesty's manner of speech is indeed prince-like, flowing as from a fountain, and yet streaming and branching itself into nature's order, full of facility and felicity, imitating none, and inimitable by any. And as in your civil estate there appeareth to be an emulation and contention of your Majesty's virtue with your fortune; a virtuous disposition with a fortunate regiment; a virtuous expectation (when time was) of your greater fortune, with a prosperous possession thereof in the due time; a virtuous observation of the laws of marriage; a virtuous and most Christian desire of peace

[* *Phædo*, p. 75; *Meno*, ad. init. Cf. Aristot. *Anal. Pri.* ii. 21.]

[1] So edd. 1629 and 1633. Ed. 1605 has *motions*.

[2] Observe that the translations within brackets are not in the original, but inserted by myself. My reasons for adopting this plan, and the principle upon which I have proceeded in translating, are explained in the preface.—J.S.

with a fortunate inclination in your neighbour princes thereunto: so likewise in these intellectual matters, there seemeth to be no less contention between the excellency of your Majesty's gifts of nature and the universality and perfection of your learning. For I am well assured that this which I shall say is no amplification at all, but a positive and measured truth; which is, that there hath not been since Christ's time any king or temporal monarch which hath been so learned in all literature and erudition, divine and human. For let a man seriously and diligently revolve and peruse the succession of the emperors of Rome, of which Cæsar the dictator, who lived some years before Christ, and Marcus Antoninus were the best learned; and so descend to the emperors of Græcia, or of the West, and then to the lines of France, Spain, England, Scotland and the rest; and he shall find this judgment is truly made [3]. For it seemeth much in a king, if by the compendious extractions of other men's wits and labours he can take hold of any superficial ornaments and shews of learning, or if he countenance and prefer learning and learned men: but to drink indeed of the true fountains of learning, nay to have such a fountain of learning in himself, in a king, and in a king born, is almost a miracle. And the more, because there is met in your Majesty a rare conjunction as well of divine and sacred literature as of profane and human; so as your Majesty standeth invested of that triplicity which in great veneration was ascribed to the ancient Hermes; the power and fortune of a King, the knowledge and illumination of a Priest, and the learning and universality of a Philosopher. This propriety inherent and individual attribute in your Majesty deserveth to be expressed not only in the fame and admiration of the present time, nor in the history or tradition of the ages succeeding; but also in some solid work, fixed memorial, and immortal monument bearing a character or signature both of the power of a king and the difference and perfection of such a king.

Therefore I did conclude with myself, that I could not make unto your Majesty a better oblation than of some treatise tending to that end; whereof the sum will consist of these two parts: the former concerning the excellency of learning and knowledge, and the excellency of the merit and true glory in the augmentation and propagation thereof; the latter [4], what the particular acts and works are which have been embraced and undertaken for the advancement of learning, and again what defects and undervalues I find in such particular acts; to the end that though I cannot positively or affirmatively advise your Majesty, or propound unto you framed particulars, yet I may excite your princely cogitation to visit the excellent treasure of your own mind, and thence to extract particulars for this purpose agreeable to your magnanimity and wisdom.

In the entrance to the former of these,—to clear the way, and as it were to make silence to have the true testimonies concerning the dignity of learning to be better heard without the interruption of tacit objections,—I think good to deliver it from the discredits and disgraces which it hath received; all from ignorance; but ignorance severally disguised; appearing sometimes in the zeal and jealousy of divines, sometimes in the severity and arrogancy of politiques, and sometimes in the errors and imperfections of learned men themselves.

I hear the former sort say, that knowledge is of those things which are to be accepted of with great limitation and caution; that the aspiring to over-much knowledge was the original temptation and sin, whereupon ensued the fall of man; that knowledge hath in it somewhat of the serpent, and therefore where it entereth into a man it makes him swell,—*Scientia inflat* [knowledge puffeth up]; that Salomon gives a censure, *That there is no end of making books, and that*

[3] In the translation the reference to the particular dynasties is omitted; he only says, —*Percurrat qui voluerit imperatorum et rerum seriem, et juxta mecum sentiet.*

[4] I have observed elsewhere, that it was only the latter part which entered into the original scheme of the *Instauratio Magna*. And though in adapting the *Advancement of Learning* to it, he retained the former part, yet he marks it in the translation as comparatively unimportant; adding with regard to the first, *quæ levior est, neque tamen ullo modo prætermittenda*, and with regard to the second, *quod caput rei est.*

much reading is weariness of the flesh ; and again in another place, *That in spacious knowledge there is much contristation, and that he that increaseth knowledge increaseth anxiety ;* that St. Paul gives a caveat, *That we be not spoiled through vain philosophy ;* that experience demonstrates how learned men have been archheretics, how learned times have been inclined to atheism, and how the contemplation of second causes doth derogate from our dependence upon God, who is the first cause.

To discover then the ignorance and error of this opinion and the misunderstanding in the grounds thereof, it may well appear these men do not observe or consider that it was not the pure knowledge of nature and universality, a knowledge by the light whereof man did give names unto other creatures in Paradise, as they were brought before him, according unto their proprieties, which gave the occasion to the fall ; but it was the proud knowledge of good and evil, with an intent in man to give law unto himself and to depend no more upon God's commandments, which was the form of the temptation. Neither is it any quantity of knowledge how great soever that can make the mind of man to swell ; for nothing can fill, much less extend, the soul of man, but God and the contemplation of God ; and therefore Salomon speaking of the two principal senses of inquisition, the eye and the ear, affirmeth that the eye is never satisfied with seeing, nor the ear with hearing ; and if there be no fulness, then is the continent greater than the content : so of knowledge itself and the mind of man, whereto the senses are but reporters, he defineth likewise in these words, placed after that calendar or ephemerides which he maketh of the diversities of times and seasons for all actions and purposes ; and concludeth thus : *God hath made all things beautiful, or decent, in the true return of their seasons ; Also he hath placed the world in man's heart, yet cannot man find out the work which God worketh from the beginning to the end ;* declaring not obscurely that God hath framed the mind of man as a mirror or glass capable of the image of the universal world, and joyful to receive the impression thereof, as the eye joyeth to receive light ; and not only delighted in beholding the variety of things and vicissitude of times, but raised also to find out and discern the ordinances and decrees which throughout all those changes are infallibly observed. And although he doth insinuate that the supreme or summary law of nature, which he calleth *the work which God worketh from the beginning to the end,* is not possible to be found out by man ; yet that doth not derogate from the capacity of the mind, but may be referred to the impediments, as of shortness of life, ill conjunction of labours, ill tradition of knowledge over from hand to hand, and many other inconveniences whereunto the condition of man is subject. For that nothing parcel of the world is denied to man's inquiry and invention he doth in another place rule over, when he saith, *The spirit of man is as the lamp of God, wherewith he searcheth the inwardness of all secrets.* If then such be the capacity and receit of the mind of man, it is manifest that there is no danger at all in the proportion or quantity of knowledge, how large soever, lest it should make it swell or out-compass itself ; no, but it is merely the quality of knowledge, which be it in quantity more or less, if it be taken without the true corrective thereof, hath in it some nature of venom or malignity, and some effects of that venom, which is ventosity or swelling. This corrective spice, the mixture whereof maketh knowledge so sovereign, is Charity, which the apostle immediately addeth to the former clause ; for so he saith, *knowledge bloweth up, but charity buildeth up ;* not unlike unto that which he delivereth in another place : *If I spake* (saith he) *with the tongues of men and angels, and had not charity, it were but as a tinkling cymbal ;* not but that it is an excellent thing to speak with the tongues of men and angels, but because if it be severed from charity, and not referred to the good of men and mankind, it hath rather a sounding and unworthy glory than a meriting and substantial virtue. And as for that censure of Salomon concerning the excess of writing and reading books and the anxiety of spirit which redoundeth from knowledge, and that admonition of St. Paul, *That we be not seduced by vain philosophy ;* let those places be rightly understood, and they do indeed excellently set forth the true bounds and limitations whereby human knowledge is confined and circumscribed ; and yet without any such contracting or coarctation, but that

it may comprehend all the universal nature of things. For these limitations are three. The first, *that we do not so place our felicity in knowledge, as we forget our mortality*. The second, *that we make application of our knowledge to give ourselves repose and contentment, and not distaste or repining*. The third, *that we do not presume by the contemplation of nature to attain to the mysteries of God*. For as touching the first of these, Salomon doth excellently expound himself in another place of the same book, where he saith; *I saw well that knowledge recedeth as far from ignorance as light doth from darkness, and that the wise man's eyes keep watch in his head, whereas the fool roundeth about in darkness; but withal I learned that the same mortality involveth them both*. And for the second, certain it is, there is no vexation or anxiety of mind which resulteth from knowledge otherwise than merely by accident; for all knowledge and wonder (which is the seed of knowledge) is an impression of pleasure in itself: but when men fall to framing conclusions out of their knowledge, applying it to their particular, and ministering to themselves thereby weak fears or vast desires, there groweth that carefulness and trouble of mind which is spoken of: for then knowledge is no more *Lumen siccum* [a dry light], whereof Heraclitus the profound said, *Lumen siccum optima anima*[5] [the dry light is the best soul]; but it becometh *Lumen madidum* or *maceratum* [a light charged with moisture], being steeped and infused in the humours of the affections. And as for the third point, it deserveth to be a little stood upon and not to be lightly passed over: for if any man shall think by view and inquiry into these sensible and material things to attain that light whereby he may reveal unto himself the nature or will of God, then indeed is he spoiled by vain philosophy: for the contemplation of God's creatures and works produceth (having regard to the works and creatures themselves) knowledge; but having regard to God, no perfect knowledge, but wonder, which is broken knowledge. And therefore it was most aptly said by one of Plato's school, *That the sense of man carrieth a resemblance with the sun, which (as we see) openeth and revealeth all the terrestrial globe; but then again it obscureth and concealeth the stars and celestial globe; so doth the sense discover natural things, but it darkeneth and shutteth up divine*. And hence it is true that it hath proceeded that divers great learned men have been heretical, whilst they have sought to fly up to the secrets of the Deity by the waxen wings of the senses. And as for the conceit that too much knowledge should incline a man to atheism, and that the ignorance of second causes should make a more devout dependence upon God which is the first cause; first, it is good to ask the question which Job asked of his friends, *Will you lie for God, as one man will do for another, to gratify him?* For certain it is that God worketh nothing in nature but by second causes; and if they would have it otherwise believed, it is mere imposture, as it were in favour towards God; and nothing else but to offer to the author of truth the unclean sacrifice of a lie. But farther, it is an assured truth and a conclusion of experience, that a little or superficial knowledge of philosophy may incline the mind of man to atheism, but a farther proceeding therein doth bring the mind back again to religion; for in the entrance of philosophy, when the second causes, which are next unto the senses, do offer themselves to the mind of man, if it dwel' and stay there, it may induce some oblivion of the highest cause; but when a man passeth on farther, and seeth the dependence of causes and the works of Providence; then, according to the allegory of the poets, he will easily believe that the highest link of nature's chain must needs be tied to the foot of Jupiter's chair. To conclude therefore, let no man, upon a weak conceit of sobriety or an ill-applied moderation, think or maintain that a man can search too far or be too well studied in the book of God's word or in the book of God's works; divinity or philosophy; but rather let men endeavour an endless progress or proficience in both; only let men beware that they apply both to charity, and not to swelling; to use,

[5] αὐγὴ ξηρὴ ψυχὴ σοφωτάτη: a corruption, according to the conjecture of Professor W. H. Thompson, of αὔη ψυχὴ σοφωτάτη; ξηρὴ having been first inserted by one commentator, to explain the unusual word αὔη, and so passed into the text; αὔη having been turned into αὐγὴ by another, to make sense. See *Remains of Professor Archer* ***Butler***, vol. i. p. 314.

and not to ostentation; and again, that they do not unwisely mingle or confound these learnings together.

And as for the disgraces which learning receiveth from politiques, they be of this nature; that learning doth soften men's minds, and makes them more unapt for the honour and exercise of arms; that it doth mar and pervert men's dispositions for matter of government and policy, in making them too curious and irresolute by variety of reading, or too peremptory or positive by strictness of rules and axioms, or too immoderate and overweening by reason of the greatness of examples, or too incompatible and differing from the times by reason of the dissimilitude of examples; or at least that it doth divert men's travails from action and business, and bringeth them to a love of leisure and privateness; and that it doth bring into states a relaxation of discipline, whilst every man is more ready to argue than to obey and execute. Out of this conceit Cato surnamed the Censor, one of the wisest men indeed that ever lived, when Carneades the philosopher came in embassage to Rome, and that the young men of Rome began to flock about him, being allured with the sweetness and majesty of his eloquence and learning, gave counsel in open senate that they should give him his despatch with all speed, lest he should infect and inchant the minds and affections of the youth, and at unawares bring in an alteration of the manners and customs of the state. Out of the same conceit or humour did Virgil, turning his pen to the advantage of his country and the disadvantage of his own profession, make a kind of separation between policy and government and between arts and sciences, in the verses so much renowned, attributing and challenging the one to the Romans, and leaving and yielding the other to the Grecians; *Tu regere imperio populos, Romane, memento, Hæ tibi erunt artes, etc.*

[Be thine, O Rome,
With arts of government to rule the nations.]

So likewise we see that Anytus, the accuser of Socrates, laid it as an article of charge and accusation against him that he did with the variety and power of his discourses and disputations withdraw young men from due reverence to the laws and customs of their country; and that he did profess a dangerous and pernicious science, which was to make the worse matter seem the better, and to suppress truth by force of eloquence and speech.

But these and the like imputations have rather a countenance of gravity than any ground of justice: for experience doth warrant that both in persons and in times there hath been a meeting and concurrence in learning and arms, flourishing and excelling in the same men and the same ages. For as for men, there cannot be a better nor the like instance, as of that pair, Alexander the Great and Julius Cæsar the dictator; whereof the one was Aristotle's scholar in philosophy, and the other was Cicero's rival in eloquence; or if any man had rather call for scholars that were great generals than generals that were great scholars, let him take Epaminondas the Theban, or Xenophon the Athenian; whereof the one was the first that abated the power of Sparta, and the other was the first that made way to the overthrow of the monarchy of Persia. And this concurrence is yet more visible in times than in persons, by how much an age is greater object than a man. For both in Ægypt, Assyria, Persia, Græcia, and Rome, the same times that are most renowned for arms are likewise most admired for learning; so that the greatest authors and philosophers and the greatest captains and governors have lived in the same ages. Neither can it otherwise be: for as in man the ripeness of strength of the body and mind cometh much about an age, save that the strength of the body cometh somewhat the more early; so in states, arms and learning, whereof the one correspondeth to the body, the other to the soul of man, have a concurrence or near sequence in times.

And for matter of policy and government, that learning should rather hurt than enable thereunto, is a thing very improbable. We see it is accounted an error to commit a natural body to empiric physicians, which commonly have a few pleasing receits whereupon they are confident and adventurous, but know neither the causes of diseases, nor the complexions of patients, nor peril of acci-

dents, nor the true method of cures. We see it is a like error to rely upon advocates or lawyers which are only men of practice and not grounded in their books, who are many times easily surprised when matter falleth out besides their experience, to the prejudice of the cause they handle. So by like reason it cannot be but a matter of doubtful consequence, if states be managed by empiric statesmen, not well mingled with men grounded in learning. But contrariwise, it is almost without instance contradictory, that ever[6] any government was disastrous that was in the hands of learned governors. For howsoever it hath been ordinary with politic men to extenuate and disable learned men by the names of *Pedantes*; yet in the records of time it appeareth in many particulars, that the governments of princes in minority (notwithstanding the infinite disadvantage of that kind of state) have nevertheless excelled the government of princes of mature age, even for that reason which they seek to traduce, which is, that by that occasion the state hath been in the hands of *Pedantes*: for so was the state of Rome for the first five years, which are so much magnified, during the minority of Nero, in the hands of Seneca, a *Pedanti*: so it was again for ten years space or more, during the minority of Gordianus the younger, with great applause and contentation in the hands of Misitheus, a *Pedanti*: so was it before that, in the minority of Alexander Severus, in like happiness, in hands not much unlike, by reason of the rule of the women, who were aided by the teachers and preceptors. Nay let a man look into the government of the bishops of Rome, as by name into the government of Pius Quintus and Sextus Quintus in our times, who were both at their entrance esteemed but as pedantical friars, and he shall find that such popes do greater things, and proceed upon truer principles of estate, than those which have ascended to the papacy from an education and breeding in affairs of estate and courts of princes; for although men bred in learning are perhaps to seek in points of convenience and accommodating for the present, which the Italians call *ragioni di stato*, whereof the same Pius Quintus could not hear spoken with patience, terming them inventions against religion and the moral virtues; yet on the other side, to recompense that, they are perfect in those same plain grounds of religion, justice, honour, and moral virtue; which if they be well and watchfully pursued, there will be seldom use of those other, no more than of physic in a sound or well-dieted body. Neither can the experience of one man's life furnish examples and precedents for the events of one man's life: for as it happeneth sometimes that the grandchild or other descendant resembleth the ancestor more than the son; so many times occurrences of present times may sort better with ancient examples than with those of the later or immediate times: and lastly, the wit of one man can no more countervail learning than one man's means can hold way with a common purse.

And as for those particular seducements or indisposition of the mind for policy and government, which learning is pretended to insinuate; if it be granted that any such thing be, it must be remembered withal, that learning ministereth in every of them greater strength of medicine or remedy, than it offereth cause of indisposition or infirmity. For if by a secret operation it make men perplexed and irresolute, on the other side by plain precept it teacheth them when and upon what ground to resolve; yea, and how to carry things in suspense without prejudice till they resolve. If it make men positive and regular, it teacheth them what things are in their nature demonstrative, and what are conjectural; and as well the use of distinctions and exceptions, as the latitude of principles and rules. If it mislead by disproportion or dissimilitude of examples, it teacheth men the force of circumstances, the errors of comparisons, and all the cautions of application; so that in all these it doth rectify more effectually than it can pervert. And these medicines it conveyeth into men's minds much more forcibly by the quickness and penetration of examples. For let a man look into the errors of Clement the seventh, so lively described by Guicciardine, who served under him, or into the errors of Cicero painted out by his own pencil in his epistles to Atticus, and he will fly apace from being irresolute. Let him look into the errors of Phocion, and he will beware how he be obstinate or inflexible. Let him

[6] So in all the editions.

but read the fable of Ixion, and it will hold him from being vaporous or imaginative. Let him look into the errors of Cato the second, and he will never be one of the Antipodes, to tread opposite to the present world.

And for the conceit that learning should dispose men to leisure and privateness, and make men slothful; it were a strange thing if that which accustometh the mind to a perpetual motion and agitation should induce slothfulness; whereas contrariwise it may be truly affirmed that no kind of men love business for itself but those that are learned; for other persons love it for profit, as an hireling that loves the work for the wages; or for honour, as because it beareth them up in the eyes of men, and refresheth their reputation which otherwise would wear; or because it putteth them in mind of their fortune, and giveth them occasion to pleasure and displeasure; or because it exerciseth some faculty wherein they take pride, and so entertaineth them in good humour and pleasing conceits toward themselves; or because it advanceth any other their ends. So that as it is said of untrue valours that some men's valours are in the eyes of them that look on, so such men's industries are in the eyes of others, or at least in regard of their own designments[7]; only learned men love business as an action according to nature, as agreeable to health of mind as exercise is to health of body, taking pleasure in the action itself, and not in the purchase; so that of all men they are the most indefatigable, if it be towards any business which can hold or detain their mind.

And if any man be laborious in reading and study and yet idle in business and action, it groweth from some weakness of body or softness of spirit, such as Seneca speaketh of; *Quidam tam sunt umbratiles, ut putent in turbido esse quicquid in luce est** [there are some men so fond of the shade, that they think they are in trouble whenever they are in the light]; and not of learning. Well may it be that such a point of a man's nature may make him give himself to learning, but it is not learning that breedeth any such point in his nature.

And that learning should take up too much time or leisure; I answer, the most active or busy man that hath been or can be hath (no question) many vacant times of leisure, while he expecteth the tides and returns of business, (except he be either tedious and of no dispatch, or lightly and unworthily ambitious to meddle in things that may be better done by others); and then the question is but how those spaces and times of leisure shall be filled and spent; whether in pleasures or in studies; as was well answered by Demosthenes to his adversary Æschines[8], that was a man given to pleasure, and told him *that his orations did smell of the lamp*: *Indeed* (said Demosthenes) *there is a great difference between the things that you and I do by lamp-light*. So as no man need doubt that learning will expulse business; but rather it will keep and defend the possession of the mind against idleness and pleasure, which otherwise at unawares may enter to the prejudice of both.

Again, for that other conceit that learning should undermine the reverence of laws and government, it is assuredly a mere depravation and calumny without all shadow of truth. For to say that a blind custom of obedience should be a surer obligation than duty taught and understood, it is to affirm that a blind man may tread surer by a guide than a seeing man can by a light. And it is without all controversy that learning doth make the minds of men gentle, generous, maniable, and pliant to government; whereas ignorance makes them churlish, thwart, and mutinous: and the evidence of time doth clear this assertion, considering that the most barbarous, rude, and unlearned times have been most subject to tumults, seditions, and changes.

And as to the judgment of Cato the Censor, he was well punished for his blasphemy against learning, in the same kind wherein he offended; for when he was past threescore years old, he was taken with an extreme desire to go to school again and to learn the Greek tongue, to the end to peruse the Greek authors; which doth well demonstrate, that his former censure of the Grecian learning

[7] *i.e.* they have for their object either the applause of others or some inward gratification of their own. (*hoc videntur agere, aut ut alii plaudant, aut ut ipsi intra se gestiant.*)

[* Seneca, Ep. 3. Quotation inaccurate.] [8] Pytheas, according to Plutarch.

was rather an affected gravity, than according to the inward sense of his own opinion. And as for Virgil's verses, though it pleased him to brave the world in taking to the Romans the art of empire, and leaving to others the arts of subjects; yet so much is manifest, that the Romans never ascended to that height of empire till the time they had ascended to the height of other arts; for in the time of the two first Cæsars, which had the art of government in greatest perfection, there lived the best poet, Virgilius Maro; the best historiographer, Titus Livius; the best antiquary, Marcus Varro; and the best, or second orator, Marcus Cicero, that to the memory of man are known. As for the accusation of Socrates, the time must be remembered when it was prosecuted; which was under the thirty tyrants, the most base, bloody, and envious persons that have governed; which revolution of state was no sooner over, but Socrates, whom they had made a person criminal, was made a person heroical, and his memory accumulate with honours divine and human; and those discourses of his, which were then termed corrupting of manners, were after acknowledged for sovereign medicines of the mind and manners, and so have been received ever since till this day. Let this therefore serve for answer to politiques, which in their humourous severity or in their feigned gravity have presumed to throw imputations upon learning; which redargution nevertheless (save that we know not whether our labours may extend to other ages) were not needful for the present, in regard of the love and reverence towards learning which the example and countenance of two so learned princes, queen Elizabeth and your Majesty, being as Castor and Pollux, *lucida sidera*, stars of excellent light and most benign influence, hath wrought in all men of place and authority in our nation.

Now therefore we come to that third sort of discredit or diminution of credit that groweth unto learning from learned men themselves, which commonly cleaveth fastest. It is either from their fortune, or from their manners, or from the nature of their studies. For the first, it is not in their power; and the second is accidental; the third only is proper to be handled. But because we are not in hand with true measure, but with popular estimation and conceit, it is not amiss to speak somewhat of the two former. The derogations therefore which grow to learning from the fortune or condition of learned men, are either in respect of scarcity of means, or in respect of privateness of life and meanness of employments.

Concerning want, and that it is the case of learned men usually to begin with little and not to grow rich so fast as other men, by reason they convert not their labours chiefly to lucre and increase; it were good to leave the common place in commendation of poverty to some friar to handle [9], to whom much was attributed by Machiavel in this point, when he said, *That the kingdom of the clergy had been long before at an end, if the reputation and reverence towards the poverty of friars had not borne out the scandal of the superfluities and excesses of bishops and prelates**. So a man might say that the felicity and delicacy of princes and great persons had long since turned to rudeness and barbarism, if the poverty of learning had not kept up civility and honour of life. But without any such advantages, it is worthy the observation what a reverend and honoured thing poverty of fortune was for some ages in the Roman state, which nevertheless was a state without paradoxes. For we see what Titus Livius saith in his introduction: *Cæterum aut me amor negotii suscepti fallit, aut nulla unquam respublica nec major, nec sanctior, nec bonis exemplis ditior fuit; nec in quam tam seræ luxuriaque immigraverint; nec ubi tantus ac tam diu paupertati ac parsimoniæ honos fuerit*: [that if affection for his subject did not deceive him, there was never any state in the world either greater or purer or richer in good examples, never any into which avarice and luxury made their way so late; never any in which poverty and frugality were for so long a time held in so great honour]. We see likewise, after that the state of Rome was not itself but did degenerate, how that person that took upon him to be counsellor to Julius Cæsar after his victory, where to begin his restoration of the state, maketh it of all points the

[9] Patribus mendicantibus (pace eorum dixerim).—*De Aug.* [* *Discorsi*, iii, 1.]

most summary to take away the estimation of wealth: *Verum hæc et omnia mala pariter cum honore pecuniæ desinent; si neque magistratus, neque alia vulgo cupienda, venalia erunt*: [but these and all other evils (he says) will cease as soon as the worship of money ceases; which will come to pass when neither magistracies nor other things that are objects of desire to the vulgar shall be to be had for money]. To conclude this point, as it was truly said that *rubor est virtutis color* [a blush is virtue's colour], though sometime it come from vice; so it may be fitly said that *paupertas est virtutis fortuna* [poverty is virtue's fortune], though sometime it may proceed from misgovernment and accidents. Surely Salomon hath pronounced it, both in censure, *Qui festinat ad divitias non erit insons* [he that maketh haste to be rich shall not be innocent]; and in precept, *Buy the truth, and sell it not; and so of wisdom and knowledge;* judging that means were to be spent upon learning, and not learning to be applied to means. And as for the privateness or obscureness (as it may be in vulgar estimation accounted) of life of contemplative men; it is a theme so common to extol a private life, not taxed with sensuality and sloth, in comparison and to the disadvantage of a civil life, for safety, liberty, pleasure, and dignity, or at least freedom from indignity, as no man handleth it but handleth it well; such a consonancy it hath to men's conceits in the expressing and to men's consents in the allowing. This only I will add, that learned men forgotten in states, and not living in the eyes of men, are like the images of Cassius and Brutus in the funeral of Junia; of which not being represented, as many others were, Tacitus saith, *Eo ipso præfulgebant, quod non visebantur* [they had the pre-eminence over all—in being left out].

And for meanness of employment, that which is most traduced to contempt is that the government of youth is commonly allotted to them; which age, because it is the age of least authority, it is transferred to the disesteeming of those employments wherein youth is conversant, and which are conversant about youth. But how unjust this traducement is (if you will reduce things from popularity of opinion to measure of reason) may appear in that we see men are more curious what they put into a new vessel than into a vessel seasoned, and what mould they lay about a young plant than about a plant corroborate; so as the weakest terms and times of all things use to have the best applications and helps. And will you hearken to the Hebrew Rabbins? *Your young men shall see visions, and your old men shall dream dreams;* say they[10] youth is the worthier age, for that visions are nearer apparitions of God than dreams. And let it be noted, that howsoever the conditions of life of *Pedantes* have[11] been scorned upon theatres, as the ape of tyranny; and that the modern looseness or negligence hath taken no due regard to the choice of schoolmasters and tutors; yet the ancient wisdom of the best times did always make a just complaint that states were too busy with their laws and too negligent in point of education: which excellent part of ancient discipline hath been in some sort revived of late times by the colleges of the Jesuits; of whom, although in regard of their superstition I may say, *quo meliores, eo deteriores*[12] [the better the worse]; yet in regard of this, and some other points concerning human learning and moral matters, I may say, as Agesilaus said to his enemy Pharnabazus, *talis quum sis, utinam noster esses* [they are so good that I wish they were on our side]. And thus much touching the discredits drawn from the fortunes of learned men.

[10] So the original. Edd. 1629 and 1633 have *the*. The meaning is, "upon this text they observe," etc. (*Ex hoc textu colligunt.*) [11] So ed. 1633. The original has *hath*.

[12] This parenthesis is omitted in the translation, no doubt as offensive to the Roman Catholics. Several other passages of the same kind occur in the *Advancement*, and they are all treated in the same way. The motive for which is sufficiently explained by Bacon himself in the letter which he sent to the King along with the *De Augmentis*. "I have been also (he says) mine own *Index Expurgatorius*, that it may be read in all places. For since my end of putting it into Latin was to have it read everywhere, it had been an absurd contradiction to free it in the language and to pen it up in the matter." Mr. Ellis made a list of these passages, which will be noticed in their places. The word *enemy* in the next clause is omitted, probably from the same motive.

As touching the manners of learned men, it is a thing personal and individual: and no doubt there be amongst them, as in other professions, of all temperatures; but yet so as it is not without truth which is said, that *abeunt studia in mores*, studies have an influence and operation upon the manners of those that are conversant in them [13].

But upon an attentive and indifferent review, I for my part cannot find any disgrace to learning can proceed from the manners of learned men; not inherent to them as they are learned [14]; except it be a fault (which was the supposed fault of Demosthenes, Cicero, Cato the second, Seneca, and many more, that because the times they read of are commonly better than the times they live in, and the duties taught better than the duties practised, they contend sometimes too far to bring things to perfection, and to reduce the corruption of manners to honesty of precepts or examples of too great height. And yet hereof they have caveats enough in their own walks. For Solon, when he was asked whether he had given his citizens the best laws, answered wisely, *Yea, of such as they would receive*: and Plato, finding that his own heart could not agree with the corrupt manners of his country, refused to bear place or office; saying, *That a man's country was to be used as his parents were, that is, with humble persuasions, and not with contestations*: and Cæsar's counsellor put in the same caveat, *Non ad vetera instituta revocans quæ jampridem corruptis moribus ludibrio sunt* [not to attempt to bring things back to the original institution, now that by reason of the corruption of manners the ancient simplicity and purity had fallen into contempt]: and Cicero noteth this error directly in Cato the second, when he writes to his friend Atticus; *Cato optime sentit, sed nocet interdum reipublicæ; loquitur enim tanquam in republica Platonis, non tanquam in fæce Romuli* [Cato means excellently well; but he does hurt sometimes to the state; for he talks as if it were Plato's republic that we are living in, and not the dregs of Romulus:] and the same Cicero doth excuse and expound the philosophers for going too far and being too exact in their prescripts, when he saith, *Isti ipsi præceptores virtutis et magistri videntur fines officiorum paulo longius quam natura vellet protulisse, ut cum adultimum animo contendissemus, ibi tamen, ubi oportet, consisteremus**: [that they had set the points of duty somewhat higher than nature would well bear; meaning belike to allow for shortcomings, and that our endeavours aiming beyond the mark and falling short, should light at the right place]: and yet himself might have said, *Monitis sum minor ipse meis* [that he fell short of his own precepts]; for it was his own fault, though not in so extreme a degree.

Another fault likewise much of this kind hath been incident to learned men; which is, that they have esteemed the preservation, good, and honour of their countries or master before their own fortunes or safeties. For so saith Demosthenes unto the Athenians: *If it would please you to note it, my counsels unto you are not such whereby I should grow great amongst you, and you become little amongst the Grecians: but they be of that nature, as they are sometimes not good for me to give, but are always good for you to follow.* And so Seneca, after he had consecrated that *Quinquennium Neronis* to the eternal glory of learned governors, held on his honest and loyal course of good and free counsel, after his master grew extremely corrupt in his government. Neither can this point otherwise be; for learning endueth men's minds with a true sense of the frailty of their persons, the casualty of their fortunes, and the dignity of their soul and vocation; so that it is impossible for them to esteem that any greatness of their own fortune can be a true or worthy end of their being and ordainment; and therefore are desirous to give their account to God, and so likewise to their masters under God (as kings and the states that they serve), in these words; *Ecce tibi lucrefeci*, and not *Ecce mihi lucrefeci*, [' Lo, I have gained for thee,' not ' Lo, I have gained for myself ']: whereas the corrupter sort of mere politiques, that have not their thoughts established by learning in the love and apprehension of duty, nor never

[13] And that learning (the translation adds), unless the mind into which it enters be much depraved, corrects the natural disposition and changes it for the better.

[14] *i.e.* not [I mean, from such manners as are] inherent etc.

[**Pro Muraenâ*, c. 31. Quotation inaccurate.]

look abroad into universality, do refer all things to themselves, and thrust themselves into the centre of the world, as if all lines should meet in them and their fortunes; never caring in all tempests what becomes of the ship of estates, so they may save themselves in the cockboat of their own fortune; whereas men that feel the weight of duty, and know the limits of self-love, use to make good their places and duties, though with peril. And if they stand in seditious and violent alterations, it is rather the reverence which many times both adverse parts do give to honesty, than any versatile advantage of their own carriage. But for this point of tender sense and fast obligation of duty which learning doth endue the mind withal, howsoever fortune may tax it and many in the depth of their corrupt principles may despise it, yet it will receive an open allowance, and therefore needs the less disproof or excusation.

Another fault incident commonly to learned men, which may be more probably defended than truly denied, is that they fail sometimes in applying themselves to particular persons; which want of exact application ariseth from two causes; the one, because the largeness of their mind can hardly confine itself to dwell in the exquisite observation or examination of the nature and customs of one person: for it is a speech for a lover and not for a wise man, *Satis magnum alter alteri theatrum sumus* [each is to other a theatre large enough]. Nevertheless I shall yield, that he that cannot contract the sight of his mind as well as disperse and dilate it, wanteth a great faculty. But there is a second cause, which is no inability but a rejection upon choice and judgment. For the honest and just bounds of observation by one person upon another extend no farther but to understand him sufficiently, whereby not to give him offence, or whereby to be able to give him faithful counsel, or whereby to stand upon reasonable guard and caution in respect of a man's self: but to be speculative into another man, to the end to know how to work him or wind him or govern him, proceedeth from a heart that is double and cloven, and not entire and ingenuous; which as in friendship it is want of integrity, so towards princes or superiors is want of duty. For the custom of the Levant, which is, that subjects do forbear to gaze or fix their eyes upon princes, is in the outward ceremony barbarous; but the moral is good: for men ought not by cunning and bent observations to pierce and penetrate into the hearts of kings, which the Scripture hath declared to be inscrutable.

There is yet another fault (with which I will conclude this part) which is often noted in learned men, that they do many times fail to observe decency and discretion in their behaviour and carriage, and commit errors in small and ordinary points of action; so as the vulgar sort of capacities do make a judgment of them in greater matters by that which they find wanting in them in smaller. But this consequence doth oft deceive men; for which I do refer them over to that which was said by Themistocles, arrogantly and uncivilly being applied to himself out of his own mouth, but being applied to the general state of this question pertinently and justly; when being invited to touch a lute, he said *he could not fiddle, but he could make a small town a great state.* So no doubt many may be well seen in the passages of government and policy, which are to seek in little and punctual occasions. I refer them also to that which Plato said of his master Socrates, whom he compared to the gallypots of apothecaries, which on the outside had apes and owls and antiques, but contained within sovereign and precious liquors and confections; acknowledging that to an external report he was not without superficial levities and deformities but was inwardly replenished with excellent virtues and powers. And so much touching the point of manners of learned men.

But in the mean time I have no purpose to give allowance to some conditions and courses base and unworthy, wherein divers professors of learning have wronged themselves and gone too far; such as were those trencher philosophers, which in the later age of the Roman state were usually in the houses of great persons, being little better than solemn parasites; of which kind, Lucian maketh a merry description of the philosopher that the great lady took to ride with her in her coach, and would needs have him carry her little dog, which he doing officiously and yet uncomely, the page scoffed, and said, *That he doubted the*

philosopher of a Stoic would turn to be a Cynic. But above all the rest, the gross and palpable flattery whereunto many (not unlearned) have abased and abused their wits and pens, turning (as Du Bartas saith) Hecuba into Helena and Faustina into Lucretia, hath most diminished the price and estimation of learning. Neither is the moral [15] dedications of books and writings, as to patrons, to be commended: for that books (such as are worthy the name of books) ought to have no patrons but truth and reason; and the ancient custom was to dedicate them only to private and equal friends, or to intitle the books with their names; or if to kings and great persons, it was to some such as the argument of the book was fit and proper for. But these and the like courses may deserve rather reprehension than defence.

Not that I can tax or condemn the morigeration or application of learned men to men in fortune. For the answer was good that Diogenes* made to one that asked him in mockery, *How it came to pass that philosophers were the followers of rich men, and not rich men of philosophers?* He answered soberly, and yet sharply, *Because the one sort knew what they had need of, and the other did not.* And of the like nature was the answer which Aristippus made, when having a petition to Dionysius and no ear given to him, he fell down at his feet, whereupon Dionysius staid and gave him the hearing and granted it; and afterward some person tender on the behalf of philosophy, reproved Aristippus that he would offer the profession of philosophy such an indignity, as for a private suit to fall at a tyrant's feet: but he answered, *It was not his fault, but it was the fault of Dionysius, that had his ears in his feet.* Neither was it accounted weakness, but discretion, in him that would not dispute his best with Adrianus Cæsar; excusing himself, *That it was reason to yield to him that commanded thirty legions.* These and the like applications and stooping to points of necessity and convenience cannot be disallowed; for though they may have some outward baseness, yet in a judgment truly made they are to be accounted submissions to the occasion and not to the person.

Now I proceed to those errors and vanities which have intervened amongst the studies themselves of the learned; which is that which is principal and proper to the present argument; wherein my purpose is not to make a justification of the errors, but, by a censure and separation of the errors, to make a justification of that which is good and sound, and to deliver that from the aspersion of the other. For we see that it is the manner of men to scandalize and deprave that which retaineth the state and virtue, by taking advantage upon that which is corrupt and degenerate: as the Heathens in the primitive church used to blemish and taint the Christians with the faults and corruptions of heretics. But nevertheless I have no meaning at this time to make any exact animadversion of the errors and impediments in matters of learning which are more secret and remote from vulgar opinion; but only to speak unto such as do fall under, or near unto, a popular observation.

There be therefore chiefly three vanities in studies, whereby learning hath been most traduced. For those things we do esteem vain, which are either false or frivolous, those which either have no truth or no use: and those persons we esteem vain, which are either credulous or curious; and curiosity is either in matter or words: so that in reason as well as in experience, there fall out to be these three distempers (as I may term them) of learning; the first, fantastical learning; the second, contentious learning; and the last, delicate learning; vain imaginations, vain altercations, and vain affectations; and with the last I will begin [16]. Martin Luther, conducted (no doubt) by an higher Providence

[15] *i.e.* customary. *Morem illum receptum libros patronis nuncupandi.*—De Aug. Ed. 1629 has *moderne.* [* Not Diogenes, but Aristippus. Diog. Laërt. *in Aristip*, c. 69].

[16] The passage which follows is much curtailed in the translation; no doubt for the reason mentioned in note p. 50. All allusion to the "higher Providence", the "degenerate traditions" of the church, the study of the ancient authors, and the "primitive but seeming new opinions" is left out: and we are only told that this distemper of luxuriance of speech (though in former times it had been occasionally in request) began

but in discourse of reason finding what a province he had undertaken against the Bishop of Rome and the degenerate traditions of the church, and finding his own solitude, being no ways aided by the opinions of his own time, was enforced to awake all antiquity, and to call former times to his succors to make a party against the present time; so that the ancient authors, both in divinity and in humanity, which had long time slept in libraries, began generally to be read and revolved. This by consequence did draw on a necessity of a more exquisite travail in the languages original wherein those authors did write, for the better understanding of those authors and the better advantage of pressing and applying their words. And thereof grew again a delight in their manner of style and phrase, and an admiration of that kind of writing; which was much furthered and precipitated by the enmity and opposition that the propounders of those (primitive but seeming new) opinions had against the schoolmen; who were generally of the contrary part, and whose writings were altogether in a differing style and form; taking liberty to coin and frame new terms of art to express their own sense and to avoid circuit of speech, without regard to the pureness, pleasantness, and (as I may call it) lawfulness of the phrase or word. And again, because the great labour then[17] was with the people (of whom the Pharisees were wont to say, *Execrabilis ista turba, quæ non novit legem*) [the wretched crowd that has not known the law], for the winning and persuading of them there grew of necessity in chief price and request eloquence and variety of discourse, as the fittest and forciblest access into the capacity of the vulgar sort. So that these four causes concurring, the admiration of ancient authors, the hate of the schoolmen, the exact study of languages, and the efficacy of preaching, did bring in an affectionate study of eloquence and copie * of speech, which then began to flourish. This grew speedily to an excess; for men began to hunt more after words than matter; and more after the choiceness of the phrase, and the round and clean composition of the sentence, and the sweet falling of the clauses, and the varying and illustration of their works with tropes and figures, than after the weight of matter, worth of subject, soundness of argument, life of invention, or depth of judgment. Then grew the flowing and watery vein of Osorius, the Portugal bishop†, to be in price. Then did Sturmius ‡ spend such infinite and curious pains upon Cicero the orator and Hermogenes the rhetorician, besides his own books of periods and imitation and the like. Then did Car of Cambridge, and Ascham, with their lectures and writings, almost deify Cicero and Demosthenes, and allure all young men that were studious unto that delicate and polished kind of learning. Then did Erasmus take occasion to make the scoffing echo; *Decem annos consumpsi in legendo Cicerone* [I have spent ten years in reading Cicero]: and the echo answered in Greek, *one*, *Asine*. Then grew the learning of the schoolmen to be utterly despised as barbarous. In sum, the whole inclination and bent of those times was rather towards copie than weight.

Here therefore [is] the first distemper of learning, when men study words and not matter: whereof though I have represented an example of late times, yet it hath been and will be *secundum majus et minus* in all time. And how is it possible but this should have an operation to discredit learning, even with vulgar capacities, when they see learned men's works like the first letter of a patent or limned book; which though it hath large flourishes, yet it is but a letter? It seems to me that Pygmalion's frenzy is a good emblem or portraiture of this vanity: for words are but the images of matter; and except they have life of reason and invention, to fall in love with them is all one as to fall in love with a picture.

But yet notwithstanding it is a thing not hastily to be condemned, to clothe and adorn the obscurity even of philosophy itself with sensible and plausible elocution. For hereof we have great examples in Xenophon, Cicero, Seneca,

to prevail very much about the time of Luther; chiefly on account of the demand for fervour and efficacy of preaching, etc. The remarks on the style of the schoolmen and the hatred which at that time began to be conceived against them are retained.

[17] So edd. 1629 and 1633. The original has *that then*. [* *I.e.* Copiousness.]

[† Author of *De rebus gestis Emamuelis*. D. 1580.] [‡ B. 1507; d. 1589.]

Plutarch, and of Plato also in some degree; and hereof likewise there is great use; for surely to the severe inquisition of truth, and the deep progress into philosophy, it is some hinderance; because it is too early satisfactory to the mind of man, and quencheth the desire of further search, before we come to a just period; but then if a man be to have any use of such knowledge in civil occasions, of conference, counsel, persuasion, discourse, or the like; then shall he find it prepared to his hands in those authors which write in that manner. But the excess of this is so justly contemptible, that as Hercules, when he saw the image of Adonis, Venus' minion, in a temple, said in disdain, *Nil sacri es* [you are no divinity]; so there is none of Hercules' followers in learning, that is, the more severe and laborious sort of inquirers into truth, but will despise those delicacies and affectations, as indeed capable of no divineness [18]. And thus much of the first disease or distemper of learning.

The second, which followeth, is in nature worse than the former; for as substance of matter is better than beauty of words, so contrariwise vain matter is worse than vain words: wherein it seemeth the reprehension of St. Paul was not only proper for those times, but prophetical for the times following; and not only respective to divinity, but extensive to all knowledge: *Devita profanas vocum novitates, et oppositiones falsi nominis scientiæ* [shun profane novelties of terms and oppositions of science falsely so called]. For he assigneth two marks and badges of suspected and falsified science; the one, the novelty of and strangeness of terms; the other, the strictness of positions, which of necessity doth induce oppositions, and so questions and altercations. Surely, like as many substances in nature which are solid do putrefy and corrupt into worms, so it is the property of good and sound knowledge to putrefy and dissolve into a number of subtile, idle, unwholesome, and (as I may term them) vermiculate questions, which have indeed a kind of quickness and life of spirit, but no soundness of matter or goodness of quality. This kind of degenerate learning did chiefly reign amongst the schoolmen; who having sharp and strong wits, and abundance of leisure, and small variety of reading; but their wits being shut up in the cells of a few authors (chiefly Aristotle their dictator) as their persons were shut up in the cells of monasteries and colleges; and knowing little history, either of nature or time; did out of no great quantity of matter, and infinite agitation of wit, spin out unto us those laborious webs of learning which are extant in their books. For the wit and mind of man, if it work upon matter, which is the contemplation of the creatures of God, worketh according to the stuff, and is limited thereby; but if it work upon itself, as the spider worketh his web, then it is endless, and brings forth indeed cobwebs of learning, admirable for the fineness of thread and work, but of no substance or profit.

This same unprofitable subtility or curiosity is of two sorts; either in the subject itself that they handle, when it is a fruitless speculation or controversy, (whereof there are no small number both in divinity and philosophy,) or in the manner or method of handling of a knowledge; which amongst them was this; upon every particular position or assertion to frame objections, and to those objections, solutions; which solutions were for the most part not confutations, but distinctions: whereas indeed the strength of all sciences is, as the strength of the old man's faggot, in the bond. For the harmony of a science, supporting each part the other, is and ought to be the true and brief confutation and suppression of all the smaller sort of objections; but on the other side, if you take

[18] In the translation he mentions another vanity of style, though not of so bad a kind, as commonly succeeding the last in point of time,—a style in which all the study is to have the words pointed, the sentences concise, and the whole composition rather twisted into shape than allowed to flow (*oratio denique potius versa quam fusa*): a trick which has the effect of making everything seem more ingenious than it really is. Such a style (he says) is found largely in Seneca, less in Tacitus and the second Pliny, and has found favour of late with the ears of our own time; but though it is agreeable to ordinary understandings and so procures some respect for literature, yet to more exact judgments it is deservedly distasteful, and may be set down among the distempers of learning, being, as well as the other, a kind of hunting after words and verbal prettiness.

out every axiom, as the sticks of the faggot, one by one, you may quarrel with them and bend them and break them at your pleasure: so that as was said of Seneca, *Verborum minutiis rerum frangit pondera* [that he broke up the weight and mass of the matter by verbal points and niceties]; so a man may truly say of the schoolmen, *Quæstionum minutiis scientiarum frangunt soliditatem* [they broke up the solidity and coherency of the sciences by the minuteness and nicety of their questions]. For were it not better for a man in a fair room to set up one great light, or branching candlestick of lights, than to go about with a small watch candle into every corner? And such is their method, that rests not so much upon evidence of truth proved by arguments, authorities, similitudes, examples, as upon particular confutations and solutions of every scruple, cavillation, and objection; breeding for the most part one question as fast it solveth another; even as in the former resemblance, when you carry the light into one corner, you darken the rest: so that the fable and fiction of Scylla seemeth to be a lively image of this kind of philosophy or knowledge; which was transformed into a comely virgin for the upper parts; but then *Candida succinctam latrantibus inguina monstris* [there were barking monsters all about her loins]: so the generalities of the schoolmen are for a while good and proportionable; but then when you descend into their distinctions and decisions, instead of a fruitful womb for the use and benefit of man's life, they end in monstrous altercations and barking questions. So as it is not possible but this quality of knowledge must fall under popular contempt, the people being apt to contemn truth upon occasion of controversies and altercations, and to think they are all out of their way which never meet: and when they see such digladiation about subtilities and matter of no use nor moment, they easily fall upon that judgment of Dionysius of Syracusa, *Verba ista sunt senum otiosorum* [it is the talk of old men that have nothing to do].

Notwithstanding certain it is, that if those schoolmen to their great thirst of truth and unwearied travail of wit had joined variety and universality of reading and contemplation, they had proved excellent lights, to the great advancement of all learning and knowledge. But as they are, they are great undertakers indeed, and fierce with dark keeping; [19] but as in the inquiry of the divine truth their pride inclined to leave the oracle of God's word and to vanish in the mixture of their own inventions, so in the inquisition of nature they ever left the oracle of God's works and adored the deceiving and deformed images which the unequal mirror of their own minds or a few received authors or principles did represent unto them. And thus much for the second disease of learning.

For the third vice or disease of learning, which concerneth deceit or untruth, it is of all the rest the foulest; as that which doth destroy the essential form of knowledge, which is nothing but a representation of truth: for the truth of being and the truth of knowing are one, differing no more than the direct beam and the beam reflected. This vice therefore brancheth itself into two sorts; delight in deceiving, and aptness to be deceived; imposture and credulity; which, although they appear to be of a diverse nature, the one seeming to proceed of cunning, and the other of simplicity, yet certainly they do for the most part concur: for as the verse noteth,

"Percontatorem fugito, nam garrulus idem est *,"

an inquisitive man is a prattler, so upon the like reason a credulous man is a deceiver: as we see it in fame, that he that will easily believe rumours will as easily augment rumours and add somewhat to them of his own; which Tacitus wisely noteth, when he saith, *Fingunt simul creduntque* [as fast as they believe one tale they make another [20]]: so great an affinity hath fiction and belief.

This facility of credit, and accepting or admitting things weakly authorized

[19] That is, fierce from being kept in the dark; the allusion being, as we see more clearly from a corresponding passage in the early Latin fragment [*ferocitatem autem et confidentiam quæ illos qui pauca norunt sequi solet* (*ut animalia in tenebris educata*) etc.—*Cog. de Sci. Hum.* 1st fragm. § 10], to the effect of darkness on the temper of animals.—*R. L. E.* The rest of this sentence, from "but as they are" is omitted in the translation. See note p. 50. [* Hor. *Ep.* i. 18, 69.]

[20] I think this is the sense in which Bacon must have understood these words; but it

or warranted, is of two kinds, according to the subject : for it is either a belief of history (as[21] the lawyers speak, matter of fact), or else of matter of art and opinion. As to the former, we see the experience and inconvenience of this error in ecclesiastical history ; which hath too easily received and registered reports and narrations of miracles wrought by martyrs, hermits, or monks of the deserts, and other holy men, and their relics, shrines, chapels, and images[22] : which though they had a passage for a time, by the ignorance of the people, the superstitious simplicity of some, and the politic toleration of others, holding them but as divine poesies ; yet after a period of time, when the mist began to clear up, they grew to be esteemed but as old wives' fables, impostures of the clergy, illusions of spirits, and badges of antichrist, to the great scandal and detriment of religion.

So in natural history, we see there hath not been that choice and judgment used as ought to have been ; as may appear in the writings of Plinius, Cardanus, Albertus, and divers of the Arabians ; being fraught with much fabulous matter, a great part not only untried but notoriously untrue, to the great derogation of the credit of natural philosophy with the grave and sober kind of wits. Wherein the wisdom and integrity of Aristotle is worthy to be observed ; that having made so diligent and exquisite a history of living creatures, hath mingled it sparingly with any vain or feigned matter ; and yet on the other side[23] hath cast all prodigious narrations which he thought worthy the recording into one book ; excellently discerning that matter of manifest truth, such whereupon observation and rule was to be built, was not to be mingled or weakened with matter of doubtful credit ; and yet again that rarities and reports that seem uncredible are not to be suppressed or denied to the memory of men.

And as for the facility of credit which is yielded to arts and opinions, it is likewise of two kinds ; either when too much belief is attributed to the arts themselves, or to certain authors in any art. The sciences themselves which have had better intelligence and confederacy with the imagination of man than with his reason, are three in number ; Astrology, Natural Magic, and Alchemy ; of which sciences nevertheless the ends or pretences are noble. For astrology pretendeth to discover that correspondence or concatenation which is between the superior globe and the inferior : natural magic pretendeth to call and reduce natural philosophy from a variety of speculations to the magnitude of works : and alchemy pretendeth to make separation of all the unlike parts of bodies which in mixtures of nature are incorporate. But the derivations and prosecutions to these ends, both in the theories and in the practices, are full of error and vanity ; which the great professors themselves have sought to veil over and conceal by enigmatical writings, and referring themselves to auricular traditions, and such other devices to save the credit of impostures. And yet surely to alchemy this right is due, that it may be compared to the husbandman whereof Æsop makes the fable, that when he died told his sons that he had left unto them gold buried under ground in his vineyard ; and they digged all over the ground, and gold they found none, but by reason of their stirring and digging the mould about the roots of their vines, they had a great vintage the year following : so assuredly the search and stir to make gold hath brought to light a great number of good and fruitful inventions and experiments, as well for the disclosing of nature as for the use of man's life.

And as for the overmuch credit that hath been given unto authors in sciences, in making them dictators, that their words should stand, and not counsels[24] to give advice ; the damage is infinite that sciences have received thereby, as the principal cause that hath kept them low, at a stay without growth or advance-

is not the sense in which Tacitus employs them (An. v. 10.). He meant that they at once invented the tale and believed it : they "credited their own lie".—*J. S.*

[21] So the original. Edd. 1629 and 1633 have *or as*.

[22] The rest of the paragraph is omitted in the translation. See note p. 50.

[23] *Sake* in the original, and also in edd. 1629 and 1633.

[24] So the original. Edd. 1629 and 1633 have *consuls*. The translation has *dictatoria quadam potestate munivit ut edicant, non senatoria ut consulant.* Bacon probably wrote *counsell's*.

ment. For hence it hath come that in arts mechanical the first deviser comes shortest, and time addeth and perfecteth; but in sciences the first author goeth furthest, and time leeseth and corrupteth. So we see, artillery, sailing, printing, and the like, were grossly managed at the first, and by time accommodated and refined; but contrariwise the philosophies and sciences of Aristotle, Plato, Democritus, Hippocrates, Euclides, Archimedes, of most vigour at the first, and by time degenerate and imbased; whereof the reason is no other, but that in the former many wits and industries have contributed in one; and in the later many wits and industries have been spent about the wit of some one, whom many times they have rather depraved than illustrated. For as water will not ascend higher than the level of the first spring-head from whence it descendeth, so knowledge derived from Aristotle, and exempted from liberty of examination, will not rise again higher than the knowledge of Aristotle. And therefore, although the position be good, *Oportet discentum credere* [a man who is learning must be content to believe what he is told], yet it must be coupled with this, *Oportet edoctum judicare* [when he has learned it he must exercise his judgment and see whether it be worthy of belief]; for disciples do owe unto masters only a temporary belief and a suspension of their own judgment until they be fully instructed, and not an absolute resignation or perpetual captivity: and therefore to conclude this point, I will say no more but, so let great authors have their due, as time which is the author of authors be not deprived of his due, which is further and further to discover truth. Thus have I gone over these three diseases of learning: besides the which, there are some other rather peccant humours than formed diseases, which nevertheless are not so secret and intrinsic but that they fall under a popular observation and traducement, and therefore are not to be passed over.

The first of these is the extreme affecting of two extremities; the one Antiquity, the other Novelty: wherein it seemeth the children of time do take after the nature and malice of the father. For as he devoureth his children, so one of them seeketh to devour and suppress the other; while antiquity envieth there should be new additions, and novelty cannot be content to add but it must deface. Surely the advice of the prophet is the true direction in this matter, *State super vias antiquas, et videte quænam sit via recta et bona, et ambulate in ea* [stand ye in the old ways, and see which is the good way, and walk therein]. Antiquity deserveth that reverence, that men should make a stand thereupon, and discover what is the best way; but when the discovery is well taken, then to make progression. And to speak truly, *Antiquitas sæculi juventus mundi*. These times are the ancient times, when the world is ancient, and not those which we account ancient *ordine retrograde*, by a computation backward from ourselves.

Another error, induced by the former, is a distrust that any thing should be now to be found out, which the world should have missed and passed over so long time; as if the same objection were to be made to time that Lucian maketh to Jupiter and other heathen gods, of which he wondereth that they begot so many children in old time and begot none in his time, and asketh whether they were become septuagenary, or whether the law *Pappia*, made against old men's marriages, had restrained them*. So it seemeth men doubt lest time is become past children and generation; wherein contrariwise we see commonly the levity and unconstancy of men's judgments, which, till a matter be done, wonder that it can be done; and as soon as it is done, wonder again that it was no sooner done; as we see in the expedition of Alexander into Asia, which at first was prejudged as a vast and impossible enterprise; and yet afterwards it pleaseth Livy to make no more of it than this, *Nil aliud quàm bene ausus vana contemnere* [it was but taking courage to despise vain apprehensions]. And the same happened to Columbus in the western navigation. But in intellectual matters it is much more common; as may be seen in most of the propositions of Euclid, which till they be demonstrate, they seem strange to our assent; but being demonstrate, our mind accepteth of them by a kind of relation (as the lawyers speak) as if we had known them before.

Another error, that hath also some affinity with the former, is a conceit that of former opinions or sects, after variety and examination, the best hath still pre-

[* Said not by Lucian but by Seneca. Lactant. *De falsa relig.* i. 16.]

vailed and suppressed the rest ; so as if a man should begin the labour of a new search, he were but like to light upon somewhat formerly rejected, and by rejection brought into oblivion : as if the multitude, or the wisest for the multitude's sake, were not ready to give passage rather to that which is popular and superficial than to that which is substantial and profound ; for the truth is, that time seemeth to be of the nature of a river or stream, which carrieth down to us that which is light and blown up, and sinketh and drowneth that which is weighty and solid.

Another error, of a diverse nature from all the former, is the over-early and peremptory reduction of knowledge into arts and methods ; from which time commonly sciences receive small or no augmentation. But as young men when they knit and shape perfectly, do seldom grow to a further stature ; so knowledge, while it is in aphorisms and observations, it is in growth ; but when it once is comprehended in exact methods, it may perchance be further polished and illustrate [25], and accommodated for use and practice ; but it increaseth no more in bulk and substance.

Another error, which doth succeed that which we last mentioned, 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.

Another error hath proceeded from too great a reverence, and a kind of adoration of the mind and understanding of man ; by means whereof men have withdrawn themselves too much from the contemplation of nature and the observations of experience, and have tumbled up and down in their own reason and conceits. Upon these intellectualists, which are notwithstanding commonly taken for the most sublime and divine philosophers, Heraclitus gave a just censure, saying, *Men sought truth in their own little worlds, and not in the great and common world ;* for they disdain to spell and so by degrees to read in the volume of God's works ; and contrariwise by continual meditation and agitation of wit do urge and as it were invocate their own spirits to divine and give oracles unto them, whereby they are deservedly deluded.

Another error that hath some connexion with this latter is, that men have used to infect their meditations, opinions, and doctrines, with some conceits which they have most admired, or some sciences which they have most applied ; and given all things else a tincture according to them, utterly untrue and unproper. So hath Plato intermingled his philosophy with theology, and Aristotle with logic, and the second school of Plato, Proclus and the rest, with the mathematics. For these were the arts which had a kind of primogeniture with them severally. So have the alchemists made a philosophy out of a few experiments of the furnace ; and Gilbertus, our countryman, hath made a philosophy out of the observations of a loadstone. So Cicero, when, reciting the several opinions of the nature of the soil, he found a musician that held the soil was but a harmony, saith pleasantly, *Hic ab arte sua non recessit*, etc. [he was constant to his own art]. But of these conceits Aristotle speaketh seriously and wisely, when he saith, *Qui respiciunt ad pauca de facili pronunciant* [they who take only few points into account find it easy to pronounce judgment].

Another error is an impatience of doubt, and haste to assertion without due and mature suspension of judgment. For the two ways of contemplation are not unlike the two ways of action commonly spoken of by the ancients ; the one plain and smooth in the beginning, and in the end impassable ; the other rough and troublesome in the entrance, but after a while fair and even. So it is in contemplation ; if a man will begin with certainties, he shall end in doubts ; but if he will be content to begin with doubts, he shall end in certainties.

Another error is in the manner of the tradition and delivery of knowledge, which is for the most part magistral and peremptory, and not ingenuous and faithful ; in a sort as may be soonest believed, and not easiliest examined. It is true

[25] So the original. Ed. 1633 has *illustrated.*

that in compendious treatises for practice that form is not to be disallowed. But in the true handling of knowledge, men ought not to fall either on the one side into the vein of Velleius the Epicurean, *Nil tam metuens, quàm ne dubitare aliqua de re videretur* [who feared nothing so much as the seeming to be in doubt about anything], nor on the other side into Socrates his ironical doubting of all things, but to propound things sincerely, with more or less asseveration, as they stand in a man's own judgment proved more or less.

Other errors there are in the scope that men propound to themselves, whereunto they bend their endeavours; for whereas the more constant and devote[26] kind of professors of any science ought to propound to themselves to make some additions to their science, they convert their labours to aspire to certain second prizes; as to be a profound interpreter or commenter, to be a sharp champion or defender, to be a methodical compounder or abridger; and so the patrimony of knowledge cometh to be sometimes improved, but seldom augmented.

But the greatest error of all the rest is the mistaking or misplacing of the last or furthest end of knowledge. For men have entered into a desire of learning and knowledge, sometimes upon a natural curiosity and inquisitive appetite; sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation; and sometimes to enable them to victory of wit and contradiction; and most times for lucre and profession; and seldom sincerely to give a true account of their gift of reason, to the benefit and use of men: as if there were sought in knowledge a couch, whereupon to rest a searching and restless spirit; or a terrace, for a wandering and variable mind to walk up and down with a fair prospect; or a tower of state, for a proud mind to raise itself upon; or a fort or commanding ground, for strife and contention; or a shop, for profit or sale; and not a rich storehouse, for the glory of the Creator and the relief of man's estate. But this is that which will indeed dignify and exalt knowledge, if contemplation and action may be more nearly and straitly conjoined and united together than they have been; a conjunction like unto that of the two highest planets, Saturn the planet of rest and contemplation, and Jupiter the planet of civil society and action. Howbeit, I do not mean, when I speak of use and action, that end before-mentioned of the applying of knowledge to lucre and profession: for I am not ignorant how much that diverteth and interrupteth the prosecution and advancement of knowledge; like unto the golden ball thrown before Atalanta, which while she goeth aside and stoopeth to take up, the race is hindered,

"Declinat cursus, aurumque volubile tollit."

Neither is my meaning, as was spoken of Socrates, to call philosophy down from heaven to converse upon the earth; that is, to leave natural philosophy aside, and to apply knowledge only to manners and policy. But as both heaven and earth do conspire and contribute to the use and benefit of man, so the end ought to be, from both philosophies to separate and reject vain speculations and whatsoever is empty and void, and to preserve and augment whatsoever is solid and fruitful; that knowledge may not be as a curtesan, for pleasure and vanity only, or as a bond-woman, to acquire and gain to her master's use; but as a spouse, for generation, fruit, and comfort.

Thus have I described and opened, as by a kind of dissection, those peccant humours (the principal of them) which have[27] not only given impediment to the proficience of learning but have given also occasion to the traducement thereof: wherein if I have been too plain, it must be remembered *Fidelia vulnera amantis, sed dolosa oscula malignantis* [faithful are the wounds of a friend, but the kisses of an enemy are deceitful]. This I think I have gained, that I ought to be the better believed in that which I shall say pertaining to commendation, because I have proceeded so freely in that which concerneth censure. And yet I have no purpose to enter into a laudative of learning, or to make a hymn to the muses (though I am of opinion that it is long since their rites were duly celebrated): but my intent is, without varnish or amplification, justly to weigh the dignity of knowledge in the balance with other things, and

[26] So the original. Ed. 1633 has *devoute*. [27] *hath* in all the old editions.

to take the true value thereof by testimonies and arguments divine and human.

First, therefore, let us seek the dignity of knowledge in the arch-type or first platform, which is in the attributes and acts of God, as far as they are revealed to man and may be observed with sobriety; wherein we may not seek it by the name of learning; for all learning is knowledge acquired, and all knowledge in God is original: and therefore we must look for it by another name, that of wisdom or sapience, as the Scriptures call it.

It is so then, that in the work of the creation we see a double emanation of virtue from God; the one referring more properly to power, the other to wisdom; the one expressed in making the subsistence of the matter, and the other in disposing the beauty of the form. This being supposed, it is to be observed, that for anything which appeareth in the history of the creation, the confused mass and matter of heaven and earth was made in a moment, and the order and disposition of that chaos or mass was the work of six days; such a note of difference it pleased God to put upon the works of power and the works of wisdom; wherewith concurreth, that in the former it is not set down that God said, *Let there be heaven and earth*, as it is set down of the works following; but actually, that God made heaven and earth: the one carrying the style of a manufacture, and the other of a law, decree, or counsel.

To proceed to that which is next in order, from God to spirits; we find as far as credit is to be given to the celestial hierarchy of that supposed Dionysius the senator of Athens[28], the first place or degree is given to the angels of love which are termed Seraphim; the second to the angels of light, which are termed Cherubim; and the third and so following places to thrones, principalities and the rest, which are all angels of power and ministry; so as the angels of knowledge and illumination are placed before the angels of office and domination.

To descend from spirits and intellectual forms to sensible and material forms; we read the first form that was created was light, which hath a relation and correspondence in nature and corporal things, to knowledge in spirits and incorporal things.

So in the distribution of days, we see the day wherein God did rest and contemplate his own works, was blessed above all the days wherein he did effect and accomplish them.

After the creation was finished, it is set down unto us that man was placed in the garden to work therein; which work so appointed to him could be no other than work of contemplation; that is, when the end of work is but for exercise and experiment, not for necessity; for there being then no reluctation of the creature, nor sweat of the brow, man's employment must of consequence have been matter of delight in the experiment, and not matter of labour for the use. Again, the first acts which man performed in Paradise consisted of the two summary parts of knowledge; the view of creatures, and the imposition of names. As for the knowledge which induced the fall, it was, as was touched before, not the natural knowledge of creatures, but the moral knowledge of good and evil; wherein the supposition was, that God's commandments or prohibitions were not the originals of good and evil, but that they had other beginnings, which man aspired to know, to the end to make a total defection from God, and to depend wholly upon himself.

To pass on: in the first event or occurrence after the fall of man, we see (as the Scriptures have infinite mysteries, not violating at all the truth of the story or letter), an image of the two estates, the contemplative state and the active state, figured in the two persons of Abel and Cain, and in the two simplest and most primitives trades of life; that of the shepherd, (who, by reason of his leisure, rest in a place, and living in view of heaven, is a lively image of a contemplative life), and that of the husbandman: where we see again the favour and election of God went to the shepherd, and not to the tiller of the ground.

[28] *quæ Dionysii Areopagitæ nomine evulgatur*, are the words of the translation: the insinuation implied in the word *supposed*, being withdrawn, or at least not so strongly expressed. See note p. 50.

So in the age before the flood, the holy records within those few memorials which are there entered and registered have vouchsafed to mention and honour the name of the inventors and authors of music and works in metal. In the age after the flood, the first great judgment of God upon the ambition of man was the confusion of tongues; whereby the open trade and intercourse of learning and knowledge was chiefly imbarred.

To descend to Moses the lawgiver, and God's first pen: he is adorned by the Scriptures with this addition and commendation, that he was *seen in all the learning of the Egyptians;* which nation we know was one of the most ancient schools of the world: for so Plato brings in the Egyptian priest saying unto Solon: *You Grecians are ever children; you have no knowledge of antiquity, nor antiquity of knowledge.* Take a view of the ceremonial law of Moses; you shall find, besides the prefiguration of Christ, the badge or difference of the people of God, the exercise and impression of obedience, and other divine uses and fruits thereof, that some of the most learned Rabbins have travelled profitably and profoundly to observe, some of them a natural, some of them a moral, sense or reduction of many of the ceremonies and ordinances. As in the law of the leprosy, where it is said, *If the whiteness have overspread the flesh, the patient may pass abroad for clean; but if there be any whole flesh remaining, he is to be shut up for unclean;* one of them noteth a principle of nature, that putrefaction is more contagious before maturity than after: and another noteth a position of moral philosophy, that men abandoned to vice do not so much corrupt manners, as those that are half good and half evil. So in this and very many other places in that law, there is to be found, besides the theological sense, much aspersion of philosophy.

So likewise in that excellent book of Job, if it be revolved with diligence, it will be found pregnant and swelling with natural philosophy; as for example, cosmography and the roundness of the world; *Qui extendit aquilonem super vacuum, et appendit terram super nihilum* [who stretches out the north upon the empty space, and hangeth the earth upon nothing]; wherein the pensileness of the earth, the pole of the north, and the finiteness or convexity of heaven are manifestly touched. So again the matter of astronomy; *Spiritus ejus ornavit cœlos, et obstetricante manu ejus eductus est Coluber tortuosus* [by his spirit he hath garnished the heavens; his hand hath formed the crooked Serpent]. And in another place; *Nunquid conjungere valebis micantes stellas Pleiadas, aut gyrum Arcturi poteris dissipare?* [canst thou bring together the glittering stars of the Pleiades, or scatter the array of Arcturus?] where the fixing of the stars, ever standing at equal distance, is with great elegancy noted. And in another place, *Qui facit Arcturum, et Oriona, et Hyadas, et interiora Austri* [which maketh Arcturus, Orion, and Hyades, and the secrets of the South]; where again he takes knowledge of the depression of the southern pole, calling it the secrets of the south, because the southern stars were in that climate unseen. Matter of generation; *Annon sicut lac mulsisti me, et sicut caseum coagulasti me?* etc. [hast thou not drawn me forth like milk, and curdled me like cheese?]. Matter of minerals; *Habet argentum venarum suarum principia: et auro locus est in quo conflatur, ferrum de terra tollitur, et lapis solutus calore in æs vertitur* [surely there is a vein for the silver, and a place for gold where they fine it. Iron is taken out of the earth, and brass is molten out of the stone]: and so forwards in that chapter.

So likewise in the person of Salomon the king, we see the gift or endowment of wisdom and learning, both in Salomon's petition and in God's assent thereunto, preferred before all other terrene and temporal felicity. By virtue of which grant or donative of God, Salomon became enabled not only to write those excellent parables or aphorisms concerning divine and moral philosophy, but also to compile a natural history of all verdure [29], from the cedar upon the mountain to the moss upon the wall, (which is but a rudiment between putrefaction and an herb), and also of all things that breathe or move. Nay, the same Salomon the king, although he excelled in the glory of treasure and magnificent

[29] *Verdor* in edd. 1605, 1629, 1633; which perhaps ought to be retained, as another form of the word rather than another way of spelling it.

buildings, of shipping and navigation, of service and attendance, of fame and renown and the like, yet he maketh no claim to any of those glories, but only to the glory of inquisition of truth; for so he saith expressly, *The glory of God is to conceal a thing, but the glory of the king is to find it out;* as if, according to the innocent play of children, the Divine Majesty took delight to hide his works to the end to have them found out; and as if kings could not obtain a greater honour than to be God's playfellows in that game, considering the great commandment of wits and means, whereby nothing needeth to be hidden from them.

Neither did the dispensation of God vary in the times after our Saviour came into the world; for our Saviour himself did first show his power to subdue ignorance, by his conference with the priests and doctors of the law, before he shewed his power to subdue nature by his miracles. And the coming of the Holy Spirit was chiefly figured and expressed in the similitude and gift of tongues, which are but *vehicula scientiæ* [carriers of knowledge].

So in the election of those instruments which it pleased God to use for the plantation of the faith, notwithstanding that at the first he did employ persons altogether unlearned otherwise than by inspiration, more evidently to declare his immediate working, and to abase all human wisdom or knowledge; yet nevertheless that counsel of his was no sooner performed, but in the next vicissitude and succession he did send his divine truth into the world waited on with other learnings as with servants or handmaids: for so we see St. Paul, who was only learned amongst the apostles, had his pen most used in the Scriptures of the New Testament.

So again we find that many of the ancient bishops and fathers of the Church were excellently read and studied in all the learning of the heathen; insomuch that the edict of the emperor Julianus, (whereby it was interdicted unto Christians to be admitted into schools, lectures, or exercises of learning *) was esteemed and accounted a more pernicious engine and machination against the Christian faith, than were all the sanguinary prosecutions of his predecessors; neither could the emulation and jealousy of Gregory the first of that name, Bishop of Rome, ever obtain the opinion of piety or devotion; but contrariwise received the censure of humour, malignity, and pusillanimity [30], even amongst holy men; in that he designed to obliterate and extinguish the memory of heathen antiquity and authors. But contrariwise it was the Christian Church, which amidst the inundations of the Scythians on the one side from the north-west, and the Saracens from the east, did preserve in the sacred lap and bosom thereof the precious relics even of heathen learning, which otherwise had been extinguished as if no such thing had ever been.

And we see before our eyes, that in the age of ourselves and our fathers, when it pleased God to call the church of Rome to account for their degenerate manners and ceremonies, and sundry doctrines obnoxious and framed to uphold the same abuses; at one and the same time it was ordained by the Divine Providence that there should attend withal a renovation and new spring of all other knowledges [31], and on the other side we see the Jesuits, who partly in themselves and partly by the emulation and provocation of their example, have much quickened and strengthened the state of learning,—we see (I say) what notable service and reparation they have done to the Roman see.

Wherefore to conclude this part, let it be observed that there be two principal duties and services, besides ornament and illustration, which philosophy and human learning do perform to faith and religion. The one, because they are an effectual inducement to the exaltation of the glory of God: For as the Psalms and other Scriptures do often invite us to consider and magnify the great and wonderful works of God, so if we should rest only in the contemplation of the exterior of them as they first offer themselves to our senses, we should do a like injury unto the majesty of God as if we should judge or construe of the store

[30] This clause is omitted in the translation; and the words *cætera viri egregii* are introduced after the name of Gregory. See note p. 50.

[31] All this, from the beginning of the paragraph, is omitted in the translation.

[* As Gibbon points out, the edict only forbids Christian professors to teach.]

of some excellent jeweller by that only which is set out toward the street in his shop. The other, because they minister a singular help and preservative against unbelief and error: For our Saviour saith, *You err, not knowing the Scriptures, nor the power of God ;* laying before us two books or volumes to study, if we will be secured from error; first the Scriptures, revealing the will of God, and then the creatures expressing his power; whereof the later is a key unto the former; not only opening our understanding to conceive the true sense of the Scriptures, by the general notions of reason and rules of speech; but chiefly opening our belief, in drawing us into a due meditation of the omnipotency of God, which is chiefly signed and engraven upon his works. Thus much therefore for divine testimony and evidence concerning the true dignity and value of learning.

As for human proofs, it is so large a field, as in a discourse of this nature and brevity it is fit rather to use choice of those things which we shall produce, than to embrace the variety of them. First therefore, in the degrees of human honour amongst the heathen it was the highest, to obtain to a veneration and adoration as a God. This unto the Christians is as the forbidden fruit. But we speak now separately of human testimony: according to which that which the Grecians call *apotheosis*, and the Latins *relatio inter divos*, was the supreme honour which man could attribute unto man; specially when it was given, not by a formal decree or act of state, as it was used among the Roman emperors, but by an inward assent and belief; which honour being so high, had also a degree or middle term; for there were reckoned above human honours, honours [32] heroical and divine; in the attribution and distribution of which honours we see antiquity made this difference: that whereas founders and uniters of states and cities, lawgivers, extirpers of tyrants, fathers of the people, and other eminent persons in civil merit, were honoured but with the titles of worthies or demi-gods; such as were Hercules, Theseus, Minos, Romulus, and the like; on the other side, such as were inventors and authors of new arts, endowments, and commodities towards man's life, were ever consecrated amongst the gods themselves; as was Ceres, Bacchus, Mercurius, Apollo, and others; and justly; for the merit of the former is confined within the circle of an age or a nation; and is like fruitful showers, which though they be profitable and good, yet serve but for that season, and for a latitude of ground where they fall; but the other is indeed like the benefits of heaven, which are permanent and universal. The former again is mixed with strife and perturbation; but the later hath the true character of divine presence, coming [33] in *aura leni*, without noise or agitation.

Neither is certainly that other merit of learning, in repressing the inconveniences which grow from man to man, much inferior to the former, of relieving the necessities which arise from nature; which merit was lively set forth by the ancients in that feigned relation of Orpheus theatre; where all beasts and birds assembled, and forgetting their several appetites, some of prey, some of game, some of quarrel, stood all sociably together listening unto the airs and accords of the harp; the sound whereof no sooner ceased, or was drowned by some louder noise, but every beast returned to his own nature: wherein is aptly described the nature and condition of men; who are full of savage and unreclaimed desires, of profit, of lust, of revenge, which as long as they give ear to precepts, to laws, to religion, sweetly touched with eloquence and persuasion of books, of sermons, of harangues, so long is society and peace maintained; but if these instruments be silent, or that sedition and tumult make them not audible, all things dissolve into anarchy and confusion.

But this appeareth more manifestly, when kings themselves, or persons of authority under them, or other governors in commonwealths and popular estates, are endued with learning. For although he might be thought partial to his own profession, that said *Then should people and estates be happy, when either kings were philosophers, or philosophers kings ;* yet so much is verified by experience,

[32] *honour* in edd. 1605, 1629, 1633.

[33] *commonly* in edd. 1629 and 1633. In the original, *com-* ends a line and the rest of the word has accidentally dropped out. [Quotation from 1 Kings, xix. 12. *Vulgate.*]

that under learned princes and governors there have been ever the best times*; for howsoever kings may have their imperfections in their passions and customs, yet if they be illuminate by learning, they have those notions of religion, policy, and morality, which do preserve them and refrain them from all ruinous and peremptory errors and excesses; whispering evermore in their ears, when counsellors and servants stand mute and silent. And senators or counsellors likewise which be learned, do proceed upon more safe and substantial principles than counsellors which are only men of experience; the one sort keeping dangers afar off, whereas the other discover them not till they come near hand, and then trust to the agility of their wit to ward or avoid them.

Which felicity of times under learned princes (to keep still the law of brevity, by using the most eminent and selected examples) doth best appear in the age which passed from the death of Domitianus the emperor until the reign of Commodus; comprehending a succession of six princes [34], all learned or singular favourers and advancers of learning; which age, for temporal respects, was the most happy and flourishing that ever the Roman empire (which then was a model of the world) enjoyed: a matter revealed and prefigured unto Domitian in a dream the night before he was slain; for he thought there was grown behind upon his shoulders a neck and a head of gold, which came accordingly to pass in those golden times which succeeded: of which princes we will make some commemoration; wherein although the matter will be vulgar, and may be thought fitter for a declamation than agreeable to a treatise infolded as this is, yet because it is pertinent to the point in hand, *neque semper arcum tendit Apollo* [and Apollo does not keep his bow always bent], and to name them only were too naked and cursory, I will not omit it altogether [35].

The first was Nerva; the excellent temper of whose government is by a glance in Cornelius Tacitus touched to the life: *Postquam divus Nerva res olim insociabiles miscuisset, imperium et libertatem* [he united and reconciled two things which used not to go together—government and liberty] [36]. And in token of his learning, the last act of his short reign left to memory was a missive to his adopted son Trajan, proceeding upon some inward discontent at the ingratitude of the times, comprehended in a verse of Homer's;

Telis, Phœbe, tuis lacrymas ulciscere nostras†.
[O Phœbus, with thy shafts avenge these tears].

Trajan, who succeeded, was for his person not learned: but if we will hearken to the speech of our Saviour, that saith, *He that receiveth a prophet in the name of a prophet, shall have a prophet's reward*, he deserveth to be placed amongst the most learned princes: for there was not a greater admirer of learning or benefactor of learning; a founder of famous libraries, a perpetual advancer of learned men to office, and a familiar converser with learned professors and preceptors, who were noted to have then most credit in court. On the other side, how much Trajan's virtue and government was admired and renowned, surely no testimony of grave and faithful history doth more lively set forth, than that legend tale of Gregorius Magnus, bishop of Rome, who was noted for the extreme envy he bare towards all heathen excellency: and yet he is reported, out of the love and estimation of Trajan's moral virtues, to have made unto God passionate and fervent prayers for the delivery of his soul out of hell; and to have obtained it,

[* Plato, *Republic*, B.v.] [34] So edd. 1629 and 1633. The original has *sciences*.

[35] In the *De Augmentis* he merely says "*de quibus*," *i.e.* the golden times, "*sigillatim sed brevissime verba faciam*". And the next five paragraphs are condensed into one.

[36] Agric. 3.: *Quanquam . . . Nerva Cæsar res olim dissociabiles miscuerit, principatum ac libertatem.* This quotation is omitted in the translation, where nothing is said of the character of Nerva's government except that he was *clementissimus imperator, quique, si nihil aliud, orbi Trajanum dedit;* from which it would almost seem that Bacon thought it hardly deserved the praise which Tacitus bestows upon it. In evidence of his *learning* he adds that he was the friend, and as it were the disciple, of Apollonius the Pythagorean. [† *Iliad*, i. 42; Xiphilinus *in Nerva*.]

with a caveat that he should make no more such petitions [37]. In this prince's time also the persecutions against the Christians received intermission, upon the certificate of Plinius Secundus, a man of excellent learning and by Trajan advanced.

Adrian, his successor, was the most curious man that lived, and the most universal inquirer; insomuch as it was noted for an error in his mind, that he desired to comprehend all things, and not to reserve himself for the worthiest things; falling into the like humour that was long before noted in Philip of Macedon, who when he would needs over-rule and put down an excellent musician in an argument touching music, was well answered by him again, *God forbid, Sir* (saith he), *that your fortune should be so bad, as to know these things better than I* [38]. It pleased God likewise to use the curiosity of this emperor as an inducement to the peace of his church in those days. For having Christ in veneration, not as a God or Saviour, but as a wonder or novelty, and having his picture in his gallery matched with Appollonius (with whom in his vain imagination he thought he had some conformity), yet it served the turn to allay the bitter hatred of those times against the Christian name; so as the church had peace during his time [39]. And for his government civil, although he did not attain to that of Trajan's [40] in glory of arms or perfection of justice, yet in deserving of the weal of the subject he did exceed him. For Trajan erected many famous monuments and buildings; insomuch as Constantine the Great in emulation was wont to call him *Parietaria*, wall flower*, because his name was upon so many walls: but his buildings and works were more of glory and triumph than use and necessity. But Adrian spent his whole reign, which was peaceable, in a perambulation or survey of the Roman empire; giving order and making assignation where he went for re-edifying of cities, towns, and forts decayed, and for cutting of rivers and streams, and for making bridges and passages, and for policing [41] of cities and commonalties with new ordinances and constitutions, and granting new franchises and incorporations; so that his whole time was a very restoration of all the lapses and decays of former times.

Antoninus [42] Pius, who succeeded him, was a prince excellently learned; and had the patient and subtile wit of a schoolman; insomuch as in common speech (which leaves no virtue untaxed) he was called *cymini sector*†, a carver or divider of cummin seed, which is one of the least seeds; such a patience he had and settled spirit to enter into the least and most exact differences of causes; a fruit no doubt of the exceeding tranquillity and serenity of his mind; which being

[37] To this story Dante alludes in the tenth canto of *Purgatory;* taking it apparently from the life of Gregory by Paul the Deacon. It seems first to have been mentioned by John Damascene in his discourse "De iis qui in fide dormierunt"; from whom St. Thomas Aquinas quotes it in his *Supplementary Questions*, 71. 5. The hymn sung in the fourteenth century in the Cathedral of Mantua on St. Paul's day, is another curious instance of the appreciation of Heathen worth in the middle ages. It is there said of St. Paul,

> Ad Maronis mausoleum
> Ductus fudit super eum
> Piæ rorem lacrymæ;
> Quem te, inquit, reddidissem
> Si te vivum invenissem
> Poetarum maxime!

See Schœll's *Histoire de la Littérature Romaine.—R. L. E.* This whole passage is omitted in the translation.

[38] Plutarch, Apoph.

[39] There seems here a confusion of two stories. It was Alexander Severus who according to Lampridius had a picture of our Saviour "matched with Apollonius" and with some others. Hadrian however did not honour Apollonius, and is said to have thought of dedicating a temple to Christ, which, if I remember rightly, Alexander actually did. *—R. L. E.*

[40] So in all three editions. Qy. Trajan? [* Aurel. Victor, Ejust. c. 41.]

[41] *pollicing*, edd. 1605 and 1629. *pollishing*, ed. 1633.

[42] *Antonius*, edd. 1605, 1629, 1633. [† Xiph. *in Anton. Pio.*]

no ways charged or incumbered either with fears, remorses, or scruples, but having been noted for a man of the purest goodness, without all fiction or affectation, that hath reigned or lived, made his mind continually present and entire. He likewise approached a degree nearer unto Christianity, and became, as Agrippa said unto St. Paul, *half a Christian ;* holding their religion and law in good opinion, and not only ceasing persecution, but giving way to the advancement of Christians.

There succeeded him the first *Divi fratres*, the two adoptive brethren, Lucius Commodus Verus, son to Ælius Verus, who delighted much in the softer kind of learning, and was wont to call the poet Martial his Virgil ; and Marcus Aurelius Antoninus ; whereof the later, who obscured his colleague [43] and survived him long, was named the Philosopher : who as he excelled all the rest in learning, so he excelled them likewise in perfection of all royal virtues ; insomuch as Julianus the emperor, in his book intitled *Cæsares*, being as a pasquil or satire to deride all his predecessors, feigned that they were all invited to a banquet of the gods, and Silenus the jester sat at the nether end of the table and bestowed a scoff on every one as they came in ; but when Marcus Philosophus came in, Silenus was gravelled and out of countenance, not knowing where to carp at him ; save at the last he gave a glance at his patience towards his wife. And the virtue of this prince, continued with that of his predecessor, made the name of Antoninus so sacred in the world, that though it were extremely dishonoured in Commodus, Caracalla, and Heliogabalus, who all bare the name, yet when Alexander Severus refused the name because he was a stranger to the family, the Senate with one acclamation said, *Quomodo Augustus, sic et Antoninus* [let the name of Antoninus be as the name of Augustus] : in such renown and veneration was the name of these two princes in those days, that they would have it as a perpetual addition in all the emperors' style. In this emperor's time also the church for the most part was in peace ; so as in this sequence of six princes we do see the blessed effects of learning in sovereignty, painted forth in the greatest table of the world..

But for a tablet or picture of smaller volume, (not presuming to speak of your Majesty that liveth,) in my judgment the most excellent is that of queen Elizabeth, your immediate predecessor in this part of Britain ; a prince that, if Plutarch were now alive to write lives [44] by parallels, would trouble him, I think, to find for her a parallel amongst women. This lady was endued with learning in her sex singular, and rare [45] even amongst masculine princes ; whether we speak of learning of [46] language or of science ; modern or ancient ; divinity or humanity. And unto the very last year of her life she accustomed to appoint set hours for reading, scarcely any young student in an university more daily or more duly. As for her [47] government, I assure myself I shall not exceed if I do affirm that this part of the island never had forty-five years of better times ; and yet not through the calmness of the season, but through the wisdom of her regiment. For if there be considered of the one side, the truth of religion established ; the constant peace and security ; the good administration of justice ; the temperate use of the prerogative, not slackened, nor much strained ; the flourishing state of learning, sortable to so excellent a patroness ; the convenient estate of wealth and means, both of crown and subject ; the habit of obedience, and the moderation of discontents ; and there be considered on the other side, the differences of religion, the troubles of neighbour countries, the ambition of Spain, and opposition of Rome ; and then that she was solitary and of herself : these things I say considered, as I could not have chosen an instance so recent and so proper, so I

[43] In the translation he says that Lucius though not so good as his brother was better than most of the other emperors. (*Fratri quidem bonitate cedens, reliquos imperatores plurimos superans*).

[44] *lynes*, ed. 1605 and 1629. *lines* ed. 1633.

[45] So edd. 1629 and 1633. Ed. 1605 has *grace*.

[46] Edd. 1629 and 1633 have *or ;* with a semicolon after *learning*, where the original has a comma ; the omission of which makes the meaning and construction clear.

[47] So edd. 1629 and 1633. The original has *the*.

suppose I could not have chosen one more remarkable or eminent, to the purpose now in hand; which is concerning the conjunction of learning in the prince with felicity in the people [48].

Neither hath learning an influence and operation only upon civil merit and moral virtue, and the arts or temperature of peace and peaceable government; but likewise it hath no less power and efficacy in enablement towards martial and military virtue and prowess; as may be notably represented in the examples of Alexander the Great and Cæsar the Dictator, mentioned before, but now in fit place to be resumed; of whose virtues and acts in war there needs no note or recital, having been the wonders of time in that kind; but of their affection towards learning, and perfections in learning, it is pertinent to say somewhat.

Alexander was bred and taught under Aristotle the great philosopher, who dedicated divers of his books of philosophy unto him. He was attended with Callisthenes and divers other learned persons, that followed him in camp, throughout his journeys and conquests. What price and estimation he had learning in doth notably appear in these three particulars: first, in the envy he used to express that he bare towards Achilles, in this that he had so good a trumpet of his praises as Homer's verses; secondly, in the judgment or solution he gave touching that precious cabinet of Darius, which was found among his jewels, whereof question was made what thing was worthy to be put into it, and he gave his opinion for Homer's works*; thirdly, in his letter to Aristotle, after he had set forth his books of nature, wherein he expostulateth with him for publishing the secrets or mysteries of philosophy, and gave him to understand that himself esteemed it more to excel other men in learning and knowledge than in power and empire†. And what use he had of learning doth appear, or rather shine, in all his speeches and answers, being full of science and use of science, and that in all variety.

And herein again it may seem a thing scholastical, and somewhat idle, to recite things that every man knoweth; but yet since the argument I handle leadeth me thereunto, I am glad that men shall perceive I am as willing to flatter (if they will so call it) an Alexander or a Cæsar or an Antoninus, that are dead many hundred years since, as any that now liveth: for it is the displaying of the glory of learning in sovereignty that I propound to myself, and not an humour of declaiming in any man's praises [49]. Observe then the speech he used of Diogenes, and see if it tend not to the true state of one of the greatest questions of moral philosophy; whether the enjoying of outward things or the contemning of them be the greatest happiness; for when he saw Diogenes so perfectly contented with so little, he said to those that mocked at his condition, *Were I not Alexander, I would wish to be Diogenes*. But Seneca inverteth it, and saith, *Plus erat quod hic nollet accipere, quam quod ille posset dare* ‡. There were more things which Diogenes would have refused, than those were which Alexander could have given or enjoyed.

Observe again that speech which was usual with him, *That he felt his mortality chiefly in two things, sleep and lust*; and see if it were not a speech extracted out of the depth of natural philosophy, and liker to have comen out of the mouth of Aristotle or Democritus than from Alexander [50].

See again that speech of humanity and poesy; when upon the bleeding of his wounds, he called unto him one of his flatterers that was wont to ascribe to him divine honour, and said, *Look, this is very blood; this is not such a liquor as Homer speaketh of, which ran from Venus' hand when it was pierced by Diomedes.*

See likewise his readiness in reprehension of logic, in the speech he used to Cassander upon a complaint that was made against his father Antipater: for

[48] This paragraph is entirely omitted in the *De Augmentis*; no doubt as one which would not be allowed at Rome and might lead to the proscription of the book. See note p. 50. [* Pliny, vii. 19.] [† Plutarch *in Alex.* c. 7.]

[49] This sentence is omitted in the translation. [‡ Seneca, *De Benef.* v. 4.]

[50] *cum tam indigentia tam redundantia naturæ per illa duo designata, mortis sint tanquam arrhabones*; the two opposite imperfections of nature, deficiency and superfluity, exhaustion and incontinence, being as it were earnests of mortality.

when Alexander happed to say, *Do you think these men would have come from so far to complain, except they had just cause of grief?* and Cassander answered, *Yea, that was the matter, because they thought they should not be disproved ;* said Alexander laughing, *See the subtilties of Aristotle, to take a matter both ways,* pro et contra, etc.

But note again how well he could use the same art which he reprehended, to serve his own humour, when bearing a secret grudge to Callisthenes because he was against the new ceremony of his adoration, feasting one night where the same Callisthenes was at the table, it was moved by some after supper, for entertainment sake, that Callisthenes who was an eloquent man might speak of some theme or purpose at his own choice ; which Callisthenes did ; choosing the praise of the Macedonian nation for his discourse, and performing the same with so good manner as the hearers were much ravished ; whereupon Alexander, nothing pleased, said, *It was easy to be eloquent upon so good a subject* ; but saith he, *Turn your style, and let us hear what you can say against us :* which Callisthenes presently undertook, and did with that sting and life, that Alexander interrupted him, and said, *The goodness of the cause made him eloquent before, and despite made him eloquent then again.*

Consider further, for tropes of rhetoric, that excellent use of a metaphor or translation, wherewith he taxed Antipater, who was an imperious and tyrannous governor : for when one of Antipater's friends commended him to Alexander for his moderation, that he did not degenerate, as his other lieutenants did, into the Persian pride, in use of purple, but kept the ancient habit of Macedon, of black ; *True,* (saith Alexander,) *but Antipater is all purple within.* Or that other, when Parmenio came to him in the plain of Arbella, and shewed him the innumerable multitude of his enemies, specially as they appeared by the infinite number of lights, as it had been a new firmament of stars, and thereupon advised him to assail them by night : whereupon he answered, *That he would not steal the victory.*

For matter of policy, weigh that significant distinction, so much in all ages embraced, that he made between his two friends Hephæstion and Craterus, when he said, *That the one loved Alexander, and the other loved the king ;* describing the principal difference of princes' best servants, that some in affection love their person, and others in duty love their crown.

Weigh also that excellent taxation of an error ordinary with counsellors of princes, that they counsel their masters according to the model of their own mind and fortune, and not of their masters ; when upon Darius' great offers Parmenio had said, *Surely I would accept these offers, were I as Alexander ;* saith Alexander, *So would I, were I as Parmenio.*

Lastly, weigh that quick and acute reply which he made when he gave so large gifts to his friends and servants, and was asked what he did reserve for himself, and he answered, *Hope ;* weigh, I say, whether he had not cast up his account aright, because *hope* must be the portion of all that resolve upon great enterprises. For this was Cæsar's portion when he went first into Gaul, his estate being then utterly overthrown with largesses. And this was likewise the portion of that noble prince, howsoever transported with ambition, Henry Duke of Guise, of whom it was usually said, that he was the greatest usurer in France, because he had turned all his estate into obligations.

To conclude therefore : as certain critics are used to say hyperbolically, *That if all sciences were lost, they might be found in Virgil ;* so certainly this may be said truly, there are the prints and footsteps of learning in those few speeches which are reported of this prince : the admiration of whom, when I consider him not as Alexander the Great, but as Aristotle's scholar, hath carried me too far.

As for Julius Cæsar, the excellency of his learning needeth not to be argued from his education, or his company, or his speeches ; but in a further degree doth declare itself in his writings and works ; whereof some are extant and permanent, and some unfortunately perished. For first, we see there is left unto us that excellent history of his own wars, which he intitled only a Commentary, wherein all succeeding times have admired the solid weight of matter, and the real passages and lively images of actions and persons, expressed in the greatest pro-

priety of words and perspicuity of narration that ever was; which that it was not the effect of a natural gift, but of learning and precept, is well witnessed by that work of his intitled *De Analogia*, being a grammatical philosophy, wherein he did labour to make this same *vox ad placitum* to become *vox ad licitum*, and to reduce custom of speech to congruity of speech; and took as it were the picture of words from the life of reason [51].

So we receive from him, as a monument both of his power and learning, the then reformed computation of the year; well expressing, that he took it to be as great a glory to himself to observe and know the law of the heavens as to give law to men upon the earth.

So likewise in that book of his *Anti-Cato*, it may easily appear that he did aspire as well to victory of wit as victory of war; undertaking therein a conflict against the greatest champion with the pen that then lived, Cicero the orator.

So again in his book of *Apophthegms* which he collected, we see that he esteemed it more honour to make himself but a pair of tables to take the wise and pithy words of others, than to have every word of his own to be made an apophthegm or an oracle; as vain princes, by custom of flattery, pretend to do. And yet if I should enumerate divers of his speeches, as I did those of Alexander, they are truly such as Salomon noteth, when he saith, *Verba sapientum tanquam aculei, et tanquam clavi in altum defixi* [the words of the wise are as goads, and as nails fixed deep in]: whereof I will only recite three, not so delectable for elegancy, but admirable for vigour and efficacy.

At first, it is reason he be thought a master of words, that could with one word appease a mutiny in his army; which was thus. The Romans, when their generals did speak to their army, did use the word *Milites*; but when the magistrates spake to the people, they did use the word *Quirites*. The soldiers were in tumult, and seditiously prayed to be cashiered; not that they so meant, but by expostulation thereof to draw Cæsar to other conditions; wherein he being resolute not to give way, after some silence, he began his speech, *Ego, Quirites*; which did admit them already cashiered; wherewith they were so surprised, crossed, and confused, as they would not suffer him to go on in his speech, but relinquished their demands, and made it their suit to be again called by the name of *Milites**.

The second speech was thus: Cæsar did extremely affect the name of king; and some were set on, as he passed by, in popular acclamation to salute him king; whereupon, finding the cry weak and poor, he put it off thus in a kind of jest, as if they had mistaken his surname; *Non Rex sum, sed Cæsar* [I am not King, but Cæsar]: a speech, that if it be searched, the life and fulness of it can scarce be expressed: for first it was a refusal of the name, but yet not serious: again it did signify an infinite confidence and magnanimity, as if he presumed Cæsar was the greater title; as by his worthiness it is come to pass till this day: but chiefly it was a speech of great allurement towards his own purpose; as if the state did strive with him but for a name, whereof mean families were vested; for Rex was a surname with the Romans, as well as King is with us.

The last speech which I will mention, was used to Metellus; when Cæsar, after war declared, did possess himself of the city of Rome; at which time entering into the inner treasury to take the money there accumulate, Metellus being tribune forbade him: whereto Cæsar said, *That if he did not desist, he would lay him dead in the place*; and presently taking himself up, he added, *Young man, it is harder for me to speak it than to do it. Adolescens, durius est mihi hoc dicere quàm facere.* A speech compounded of the greatest terror and greatest clemency that could proceed out of the mouth of man.

But to return and conclude with him: it is evident himself knew well his own perfection in learning, and took it upon him; as appeared when upon occasion

[51] This passage is translated without addition or alteration. But Bacon seems to have changed his opinion afterwards upon the point in question. For in the sixth book of the *De Augmentis*, c. i., he intimates a suspicion that Cæsar's book was not a grammatical philosophy, but only a set of precepts for the formation of a pure, perfect, and unaffected style. See p. 122. [* Sueton, *in Julio*, c. 70. Cf. Appian, *Bel, Civ.* ii. 93.]

that some spake what a strange resolution it was in Lucius Sylla to resign his dictature, he scoffing at him, to his own advantage, answered, *That Sylla could not skill of letters, and therefore knew not how to dictate.*

And here it were fit to leave this point touching the concurrence of military virtue and learning; (for what example would come with any grace after those two of Alexander and Cæsar?) were it not in regard of the rareness of circumstance that I find in one other particular, as that which did so suddenly pass from extreme scorn to extreme wonder; and it is of Xenophon the philosopher, who went from Socrates' school into Asia, in the expedition of Cyrus the younger against king Artaxerxes. This Xenophon at that time was very young, and never had seen the wars before; neither had any command in the army, but only followed the war as a voluntary, for the love and conversation of Proxenus his friend. He was present when Falinus came in message from the great king to the Grecians, after that Cyrus was slain in the field, and they a handful of men left to themselves in the midst of the king's territories, cut off from their country by many navigable rivers, and many hundred miles. The message imported that they should deliver up their arms, and submit themselves to the king's mercy. To which message before answer was made, divers of the army conferred familiarly with Falinus; and among the rest Xenophon happened to say, *Why Falinus, we have now but these two things left, our arms and our virtue; and if we yield up our arms, how shall we make use of our virtue?* Whereto Falinus smiling on him, said, *If I be not deceived, young gentleman, you are an Athenian; and I believe you study philosophy, and it is pretty that you say; but you are much abused if you think your virtue can withstand the king's power**. Here was the scorn; the wonder followed: which was, that this young scholar or philosopher, after all the captains were murdered in parley by treason, conducted those ten thousand foot through the heart of all the king's high countries from Babylon to Græcia in safety, in despite of all the king's forces, to the astonishment of the world, and the encouragement of the Grecians in time succeeding to make invasion upon the kings of Persia; as was after purposed by Jason the Thessalian, attempted by Agesilaus the Spartan, and achieved by Alexander the Macedonian; all upon the ground of the act of that young scholar.

To proceed now from imperial and military virtue to moral and private virtue: first, it is an assured truth which is contained in the verses,

> Scilicet ingenuas didicisse fideliter artes
> Emollit mores, nec sinit esse feros†;

[a true proficiency in liberal learning softens and humanises the manners]. It taketh away the wildness and barbarism and fierceness of men's minds: but indeed the accent had need be upon *fideliter* [it must be a *true* proficiency]: for a little superficial learning [52] doth rather work a contrary effect. It taketh away all levity, temerity, and insolency, by copious suggestion of all doubts and difficulties, and acquainting the mind to balance reasons on both sides, and to turn back the first offers and conceits of the mind, and to accept of nothing but examined and tried. It taketh away vain admiration of any thing, which is the root of all weakness. For all things are admired, either because they are new, or because they are great. For novelty, no man that wadeth in learning or contemplation throughly, but will find that printed in his heart *Nil novi super terram* [there is nothing new under the sun]. Neither can any man marvel at the play of puppets, that goeth behind the curtain and adviseth well of the motion. And for magnitude, as Alexander the Great after that he was used to great armies and the great conquests of the spacious provinces in Asia, when he received letters out of Greece of some fights and services there, which were commonly for a passage or a fort or some walled town at the most, he said, *It seemed to him that he was advertised of the battles of the frogs and the mice, that the old tales went of*‡: so certainly if a man meditate much upon the universal frame of nature, the earth with men upon it (the divineness of souls except) will not seem much other than an ant-hill, whereas some ants carry corn, and some carry

[52] *tumultuaria cognitio.* [* Xen. *Anab.* ii. 1, 12.] Text inaccurate. [† Ovid. *Ex. Pont* ii. 9, 47. Inaccurate.] [‡ Plut. *in Agesil.* c. 15.]

their young, and some go empty, and all to and fro a little heap of dust. It taketh away or mitigateth fear of death or adverse fortune ; which is one of the greatest impediments of virtue and imperfections of manners. For if a man's mind be deeply seasoned with the consideration of the mortality and corruptible nature of things, he will easily concur with Epictetus, who went forth one day and saw a woman weeping for her pitcher of earth that was broken, and went forth the next day and saw a woman weeping for her son that was dead ; and thereupon said, *Heri vidi fragilem frangi, hodie vidi mortalem mori* [yesterday I saw a brittle thing broken, to-day a mortal dead]. And therefore Virgil did excellently and profoundly couple the knowledge of causes and the conquest of all fears together, as *concomitantia*.

> Felix qui potuit rerum cognoscere causas
> Quique metus omnes et inexorabile fatum
> Subjecit pedibus, strepitumque Acherontis avari.
>
> [Happy the man who doth the causes know
> Of all that is: serene he stands, above
> All fears; above the inexorable Fate,
> And that insatiate gulph that roars below.]

It were too long to go over the particular remedies which learning doth minister to all the diseases of the mind ; sometimes purging the ill humours, sometimes opening the obstructions, sometimes helping digestion, sometimes increasing appetite, sometimes healing the wounds and exulcerations thereof, and the like ; and therefore I will conclude with that which hath *rationem totius* ; which is, that it disposeth the constitution of the mind not to be fixed or settled in the defects thereof, but still to be capable and susceptible of growth and reformation. For the unlearned man knows not what it is to descend into himself or to call himself to account, nor the pleasure of that *suavissima vita, indies sentire se fieri meliorem* [to feel himself each day a better man than he was the day before]. The good parts he hath he will learn to shew to the full and use them dexterously, but not much to increase them : the faults he hath he will learn how to hide and colour them, but not much to amend them ; like an ill mower, that mows on still and never whets his scythe : whereas with the learned man it fares otherwise, that he doth ever intermix the correction and amendment of his mind with the use and employment thereof. Nay further, in general and in sum, certain it is that *veritas* and *bonitas* differ but as the seal and the print ; for truth prints goodness, and they be the clouds of error which descend in the storms of passions and perturbations.

From moral virtue let us pass on to matter of power and commandment, and consider whether in right reason there be any comparable with that wherewith knowledge investeth and crowneth man's nature. We see the dignity of the commandment is according to the dignity of the commanded : to have commandment over beasts, as herdsmen have, is a thing contemptible ; to have commandment over children, as schoolmasters have, is a matter of small honour ; to have commandment over galley-slaves is a disparagement rather than an honour. Neither is the commandment of tyrants much better, over people which have put off the generosity of their minds : and therefore it was ever holden that honours in free monarchies and commonwealths had a sweetness more than in tyrannies ; because the commandment extendeth more over the wills of men, and not only over their deeds and services. And therefore when Virgil putteth himself forth to attribute to Augustus Cæsar the best of human honours, he doth it in these words :

> victorque volentes
> Per populos dat jura, viamque affectat Olympo
>
> [Moving in conquest onward, at his will
> To willing peoples he gives laws, and shapes
> Through worthiest deeds on earth his course to Heaven].

But yet the commandment of knowledge is yet higher than the commandment

over the will, for it is a commandment over the reason, belief, and understanding of man, which is the highest part of the mind, and giveth law to the will itself. For there is no power on earth which setteth up a throne or chair of estate in the spirits and souls of men, and in their cogitations, imaginations, opinions, and beliefs, but knowledge and learning. And therefore we see the detestable and extreme pleasure that arch-heretics and false prophets and impostors are transported with, when they once find in themselves that they have a superiority in the faith and conscience of men ; so great, that if they have once tasted of it, it is seldom seen that any torture or persecution can make them relinquish or abandon it. But as this is that which the author of the Revelation calleth the depth or profoundness of Satan ; so by argument of contraries, the just and lawful sovereignty over men's understanding, by force [53] of truth rightly interpreted, is that which approacheth nearest to the similitude of the divine rule.

As for fortune and advancement, the beneficence of learning is not so confined to give fortune only to states and commonwealths, as it doth not likewise give fortune to particular persons. For it was well noted long ago, that Homer hath given more men their livings than either Sylla or Cæsar or Augustus ever did, notwithstanding their great largesses and donatives and distributions of lands to so many legions. And no doubt it is hard to say whether arms or learning have advanced greater numbers. And in case of sovereignty, we see that if arms or descent have carried away the kingdom, yet learning hath carried the priesthood, which ever hath been in some competition with empire.

Again, for the pleasure and delight of knowledge and learning, it far surpasseth all other in nature : for shall the pleasures of the affections so exceed the senses, as much as the obtaining of desire or victory exceedeth a song or a dinner ; and must not of consequence the pleasures of the intellect or understanding exceed the pleasures of the affections ? We see in all other pleasures there is satiety, and after they be used, their verdure [54] departeth ; which sheweth well they be but deceits of pleasure, and not pleasures ; and that it was the novelty which pleased, and not the quality. And therefore we see that voluptuous men turn friars, and ambitious princes turn melancholy. But of knowledge there is no satiety, but satisfaction and appetite are perpetually interchangeable ; and therefore appeareth to be good in itself simply, without fallacy or accident. Neither is that pleasure of small efficacy and contentment to the mind of man, which the poet Lucretius describeth elegantly,

Suave mari magno, turbantibus æquora ventis, etc.

It is a view of delight (saith he) *to stand or walk upon the shore side, and to see a ship tossed with tempest upon the sea ; or to be in a fortified tower, and to see two battles join upon a plain. But it is a pleasure incomparable, for the mind of man to be settled, landed, and fortified in the certainty of truth ; and from thence to descry and behold the errors, perturbations, labours, and wanderings up and down of other men.*

Lastly, leaving the vulgar arguments, that by learning man excelleth man in that wherein man excelleth beasts ; that by learning man ascendeth to the heavens and their motions, where in body he cannot come ; and the like ; let us conclude with the dignity and excellency of knowledge and learning in that whereunto man's nature doth most aspire ; which is immortality or continuance ; for to this tendeth generation, and raising of houses and families ; to this buildings, foundations, and monuments ; to this tendeth the desire of memory, fame, and celebration ; and in effect, the strength of all other human desires. We see then how far the monuments of wit and learning are more durable than the monuments of power or of the hands. For have not the verses of Homer continued twenty-five hundred years or more, without the loss of a syllable or letter ; during which time infinite palaces, temples, castles, cities, have been decayed

[53] So edd. 1629 and 1633. The original has *face*.

[54] *verdour* in the original and also in edd. 1629 and 1633. See p. 62.

and demolished? It is not possible to have the true pictures or statues of Cyrus, Alexander, Cæsar, no nor of the kings or great personages of much later years; for the originals cannot last, and the copies cannot but leese of the life and truth. But the images of men's wits and knowledges remain in books, exempted from the wrong of time and capable of perpetual renovation. Neither are they fitly to be called images, because they generate still, and cast their seeds in the minds of others, provoking and causing infinite actions and opinions in succeeding ages. So that if the invention of the ship was thought so noble, which carrieth riches and commodities from place to place, and consociateth the most remote regions in participation of their fruits, how much more are letters to be magnified, which as ships pass through the vast seas of time, and make ages so distant to participate of the wisdom, illuminations, and inventions, the one of the other? Nay further, we see some of the philosophers which were least divine and most immersed in the senses and denied generally the immortality of the soul, yet came to this point, that whatsoever motions the spirit of man could act and perform without the organs of the body they thought might remain after death; which were only those of the understanding, and not of the affection: so immortal and incorruptible a thing did knowledge seem unto them to be*. But we, that know by divine revelation that not only the understanding but the affections purified, not only the spirit but the body changed, shall be advanced to immortality, do disclaim in [55] these rudiments of the senses. But it must be remembered both in this last point, and so it may likewise be needful in other places, that in probation of the dignity of knowledge or learning I did in the beginning separate divine testimony from human; which method I have pursued, and so handled them both apart.

Nevertheless I do not pretend, and I know it will be impossible for me by any pleading of mine, to reverse the judgment, either of Æsop's cock, that preferred the barleycorn before the gem; or of Midas, that being chosen judge between Apollo president of the Muses, and Pan god of the flocks, judged for plenty; or of Paris, that judged for beauty and love against wisdom and power; or of Agrippina, *occidat matrem, modo imperet* † [let him kill his mother so he be emperor], that preferred empire with condition never so detestable; or of Ulysses, *qui vetulam prætulit immortalitati* [that preferred an old woman to an immortality], being a figure of those which prefer custom and habit before all excellency; or of a number of the like popular judgments. For these things continue as they have been: but so will that also continue whereupon learning hath ever relied, and which faileth not: *Justificata est sapientia a filiis suis* [wisdom is justified of her children].

[* Mr. Ellis notes that "the doctrine of the soul's immortality here referred to is that which was attributed to Aristotle and his followers, who are here contrasted with the Platonists, as being more 'immersed in the senses'".]

[55] So all three editions. The translation has *nos autem . . . . conculcantes hæc rudimenta atque offucias sensuum, novimus* etc.

[† "Occidat dum imperet." Tac. Ann. xiv. 9.]

THE SECOND BOOK.

TO THE KING

It might seem to have more convenience, though it come often otherwise to pass, (excellent King,) that those which are fruitful in their generations, and have in themselves the foresight of immortality in their descendants, should likewise be more careful of the good estate of future times; unto which they know they must transmit and commend over their dearest pledges. Queen Elizabeth was a sojourner in the world in respect of her unmarried life; and was a blessing to her own times; and yet so as the impression of her good government, besides her happy memory, is not without some effect which doth survive her[1]. But to your Majesty, whom God hath already blessed with so much royal issue, worthy to continue and represent you for ever, and whose youthful and fruitful bed doth yet promise many the like renovations, it is proper and agreeable to be conversant not only in the transitory parts of good government, but in those acts also which are in their nature permanent and perpetual. Amongst the which (if affection do not transport me) there is not any more worthy than the further endowment of the world with sound and fruitful knowledge: for why should a few received authors stand up like Hercules' Columns, beyond which there should be no sailing or discovering, since we have so bright and benign a star as your Majesty to conduct and prosper us? To return therefore where we left, it remaineth to consider of what kind those acts are, which have been undertaken and performed by kings and others for the increase and advancement of learning: wherein I purpose to speak actively without digressing or dilating.

Let this ground therefore be laid, that all works are overcomen by amplitude of reward, by soundness of direction, and by the conjunction of labours. The first multiplieth endeavour, the second preventeth error, and the third supplieth the frailty of man. But the principal of these is direction: for *claudus in via antevertit cursorem extra viam* [the cripple that keeps the way gets to the end of the journey sooner than the runner who goes aside]; and Salomon excellently setteth it down, *If the iron be not sharp, it requireth more strength; but wisdom is that which prevaileth;* signifying that the invention or election of the mean is more effectual than any inforcement or accumulation of endeavours. This I am induced to speak, for that (not derogating from the noble intention of any that have been deservers towards the state of learning) I do observe nevertheless that their works and acts are rather matters of magnificence and memory than of progression and proficience, and tend rather to augment the mass of learning in the multitude of learned men than to rectify or raise the sciences themselves.

The works or acts of merit towards learning are conversant about three objects; the places of learning, the books of learning, and the persons of the learned. For as water, whether it be the dew of heaven or the springs of the earth, doth scatter and leese itself in the ground, except it be collected into some receptacle, where it may by union comfort and sustain itself; and for that cause the industry of man hath made and framed spring-heads, conduits, cisterns, and pools, which men have accustomed likewise to beautify and adorn with accomplishments of magnificence and state, as well as of use and necessity; so this excellent liquor of knowledge, whether it descend from divine inspiration or spring from human sense, would soon perish and vanish to oblivion, if it were not preserved

[1] This last clause is omitted in the translation. See note p. 50.

in books, traditions, conferences, and places appointed, as universities, colleges and schools, for the receipt and comforting of the same.

The works which concern the seats and places of learning are four; foundations and buildings, endowments with revenues, endowments with franchises and privileges, institutions and ordinances for government; all tending to quietness and privateness of life, and discharge of cares and troubles; much like the stations which Virgil prescribeth for the hiving of bees:

> Principio sedes apibus statioque petenda,
> Quo neque sit ventis aditus, etc.
> [First for thy bees a quiet station find,
> And lodge them under covert of the wind[2].]

The works touching books are two: first libraries, which are as the shrines where all the relics of the ancient saints, full of true virtue and that without delusion or imposture[3], are preserved and reposed; secondly, new editions of authors, with more correct impressions, more faithful translations, more profitable glosses, more diligent annotations, and the like.

The works pertaining to the persons of learned men (besides the advancement and countenancing of them in general) are two; the reward and designation of writers and inquirers concerning any parts of learning not sufficiently laboured and prosecuted.

These are summarily the works and acts, wherein the merits of many excellent princes and other worthy personages have been conversant. As for any particular commemorations, I call to mind what Cicero said, when he gave general thanks; *Difficile non aliquem, ingratum quenquam præterire* [it were hard to remember all, and yet ungracious to forget any]. Let us rather, according to the Scriptures, look unto that part of the race which is before us than look back to that which is already attained.

First therefore, amongst so many great foundations of colleges in Europe, I find it strange that they are all dedicated to professions, and none left free to arts and sciences at large. For if men judge that learning should be referred to action, they judge well; but in this they fall into the error described in the ancient fable; in which the other parts of the body did suppose the stomach had been idle, because it neither performed the office of motion, as the limbs do, nor of sense, as the head doth; but yet notwithstanding it is the stomach that digesteth and distributeth to all the rest. So if any man think philosophy and universality to be idle studies, he doth not consider that all professions are from thence served and supplied. And this I take to be a great cause that hath hindered the progression of learning, because these fundamental knowledges have been studied but in passage. For if you will have a tree bear more fruit than it hath used to do, it is not any thing you can do to the boughs, but it is the stirring of the earth and putting new mould about the roots that must work it. Neither is it to be forgotten that this dedicating of foundations and dotations to professory learning hath not only had a malign aspect and influence upon the growth of sciences, but hath also been prejudicial to states and governments. For hence it proceedeth that princes find a solitude in regard of able men to serve them in causes of estate, because there is no education collegiate which is free; where such as were so disposed might give themselves to histories, modern languages, books of policy and civil discourse, and other the like enablements unto service of estate.

And because founders of colleges do plant and founders of lectures do water, it followeth well in order to speak of the defect which is in public lectures; namely, in the smallness and meanness of the salary or reward which in most places is assigned unto them[4]; whether they be lectures of arts, or of professions. For it is necessary to the progression of sciences that readers[5] be of the most able and sufficient men; as those which are ordained for generating and propagating of sciences, and not for transitory use. This cannot be, except

[2] Dryden. [3] This clause is omitted in the *De Augmentis*. See note p. 50.
[4] In the *De Augmentis* he adds *præsertim apud nos*. [5] *i.e.* lecturers.

their condition and endowment be such as may content the ablest man to appropriate his whole labour and continue his whole age in that function and attendance; and therefore must have a proportion answerable to that mediocrity or competency of advancement which may be expected from a profession or the practice of a profession. So as, if you will have sciences flourish, you must observe David's military law, which was, *That those which staid with the carriage should have equal part with those which were in the action*; else will the carriages be ill attended: So readers in sciences are indeed the guardians of the stores and provisions of sciences whence men in active courses are furnished, and therefore ought to have equal entertainment with them; otherwise if the fathers in sciences be of the weakest sort or be ill-maintained,

Et patrum invalidi referent jejunia nati:

[the poor keeping of the parents will appear in the poor constitution of the off-spring].

Another defect I note, wherein I shall need some alchemist to help me, who call upon men to sell their books and to build furnaces; quitting and forsaking Minerva and the Muses as barren virgins, and relying upon Vulcan. But certain it is that unto the deep, fruitful, and operative study of many sciences, specially natural philosophy and physic[6], books be not only the instrumentals; wherein also the beneficence of men hath not been altogether wanting; for we see spheres, globes, astrolabes, maps, and the like, have been provided as appurtenances to astronomy and cosmography, as well as books: we see likewise that some places instituted for physic have annexed the commodity of gardens for simples of all sorts, and do likewise command the use of dead bodies for anatomies. But these do respect but a few things. In general, there will hardly be any main proficience in the disclosing of nature, except there be some allowance for expenses about experiments; whether they be experiments appertaining to Vulcanus or Dædalus, furnace or engine, or any other kind; and therefore as secretaries and spials of princes and states bring in bills for intelligence, so you must allow the spials and intelligencers of nature to bring in their bills, or else you shall be ill advertised.

And if Alexander made such a liberal assignation to Aristotle of treasure for the allowance of hunters, fowlers, fishers, and the like, that he might compile an History of nature, much better do they deserve it that travail[7] in Arts of nature[8].

Another defect which I note, is an intermission or neglect in those which are governors in universities of consultation, and in princes or superior persons of visitation; to enter into account and consideration, whether the readings, exercises, and other customs appertaining unto learning, anciently begun and since continued, be well instituted or no; and thereupon to ground an amendment or reformation in that which shall be found inconvenient. For it is one of your Majesty's own most wise and princely maxims, *that in all usages and precedents, the times be considered wherein they first began; which if they were weak or ignorant, it derogateth from the authority of the usage, and leaveth it for suspect.* And therefore in as much as most of the usages and orders of the universities were derived from more obscure times, it is the more requisite they be re-examined. In this kind I will give an instance or two for example sake, of things that are the most obvious and familiar. The one is a matter which, though it be ancient and general, yet I hold to be an error; which is, that scholars in universities come too soon and too unripe to logic and rhetoric; arts fitter for graduates than children and novices: for these two, rightly taken, are the gravest of sciences; being the arts of arts, the one for judgment, the other for ornament; and they be the rules and directions how to set forth and

[6] *i.e.* medicine. [7] *travailes* in the original, and also in edd. 1629 and 1633.

[8] *i.e.* in working upon and altering nature by art. The meaning is expressed more clearly in the translation: *majus quiddum debetur iis qui non in saltibus naturæ pererrant, sed in labyrinthis artium viam aperiunt*: the compiler of a history of nature being likened to a wanderer through the woods, the "travailer in arts and nature" to one who makes his way through a labyrinth.

dispose matter; and therefore for minds empty and unfraught with matter, and which have not gathered that which Cicero calleth *sylva* and *supellex*, stuff and variety, to begin with those arts (as if one should learn to weigh or to measure or to paint the wind), doth work but this effect, that the wisdom of those arts, which is great and universal, is almost made contemptible, and is degenerate into childish sophistry and ridiculous affectation. And further, the untimely learning of them hath drawn on by consequence the superficial and unprofitable teaching and writing of them, as fitteth indeed to the capacity of children. Another is a lack I find in the exercises used in the universities, which do make too great a divorce between invention and memory; for their speeches are either premeditate *in verbis conceptis*, where nothing is left to invention, or merely *extemporal*, where little is left to memory: whereas in life and action there is least use of either of these, but rather of intermixtures of premeditation and invention, notes and memory; so as the exercise fitteth not the practice, nor the image the life; and it is ever a true rule in exercises, that they be framed as near as may be to the life and practice; for otherwise they do pervert the motions and faculties of the mind, and not prepare them. The truth whereof is not obscure, when scholars come to the practices of professions, or other actions of civil life; which when they set into, this want is soon found by themselves, and sooner by others. But this part, touching the amendment of the institutions and orders of universities, I will conclude with the clause of Cæsar's letter to Oppius and Balbus, *Hoc quemadmodum fieri possit, nonnulla mihi in mentem veniunt, et multa reperiri possunt; de iis rebus rogo vos ut cogitationem suscipiatis* [how this may be done, some things occur to me and more may be thought of. I would have you take these matters into consideration].

Another defect which I note, ascendeth a little higher than the precedent. For as the proficience of learning consisteth much in the orders and institutions of universities in the same states and kingdoms, so it would be yet more advanced, if there were more intelligence mutual between the universities of Europe than now there is. We see there be many orders and foundations, which though they be divided under several sovereignties and territories, yet they take themselves to have a kind of contract, fraternity, and correspondence one with the other, insomuch as they have Provincials and Generals [9]. And surely as nature createth brotherhood in families, and arts mechanical contract brotherhoods in communalties, and the anointment of God superinduceth a brotherhood in kings and bishops; so in like manner there cannot but be a fraternity in learning and illumination, relating to that paternity which is attributed to God, who is called the Father of illuminations or lights. The last defect which I will note is, that there hath not been, or very rarely been, any public designation of writers or inquirers concerning such parts of knowledge as may appear not to have been already sufficiently laboured or undertaken; unto which point it is an inducement, to enter into a view and examination what parts of learning have been prosecuted, and what omitted; for the opinion of plenty is amongst the causes of want, and the great quantity of books maketh a shew rather of superfluity than lack; which surcharge nevertheless is not to be remedied by making no more books, but by making more good books, which, as the serpent of Moses [10], might devour the serpents of the enchanters.

The removing of all the defects formerly enumerate, except the last, and of the active part also of the last, (which is the designation of writers), are *opera basilica* [works for a king]; towards which the endeavours of a private man may be but as an image in a crossway, that may point at the way but cannot go it. But the inducing part of the latter (which is the survey of learning) may be set forward by private travel. Wherefore I will now attempt to make a general and faithful perambulation of learning, with an inquiry what parts thereof lie fresh and waste, and not improved and converted by the industry of man; to the end that such a plot made and recorded to memory may both

[9] *Præfectos (alios provinciales, alios generales) quibus omnes parent.*—De Aug.
[10] Not Moses, but Aaron. Ex. i. 17.—*R. L. E.*

minister light to any public designation, and also serve to excite voluntary endeavours; wherein nevertheless my purpose is at this time to note only omissions and deficiencies, and not to make any redargution of errors or incomplete prosecutions[11]; for it is one thing to set forth what ground lieth unmanured, and another thing to correct ill husbandry in that which is manured[12].

In the handling and undertaking of which work I am not ignorant what it is that I do now move and attempt, nor insensible of mine own weakness to sustain my purpose; but my hope is that if my extreme love to learning carry me too far, I may obtain the excuse of affection; for that *it is not granted to man to love and to be wise*. But I know well I can use no other liberty of judgment than I must leave to others; and I for my part shall be indifferently glad either to perform myself or accept from another that duty of humanity, *Nam qui erranti comiter monstrat viam*, etc. [to put the wanderer in the right way]. I do foresee likewise that of those things which I shall enter and register as deficiencies and omissions, many will conceive and censure that some of them are already done and extant; others to be but curiosities, and things of no great use; and others to be of too great difficulty and almost impossibility to be compassed and effected. But for the two first, I refer myself to the particulars. For the last, touching impossibility, I take it those things are to be held possible which may be done by some person, though not by everyone; and which may be done by many, though not by any one; and which may be done in succession of ages, though not within the hour-glass of one man's life; and which may be done by public designation, though not by private endeavour. But notwithstanding if any man will take to himself rather that of Salomon, *Dicit piger, Leo est in via* [the slothful man saith there is a lion in the path], than that of Virgil, *Possunt quia posse videntur* [they find it possible because they think it possible], I shall be content that my labours be esteemed but as the better sort of wishes; for as it asketh some knowledge to demand a question not impertinent, so it requireth some sense to make a wish not absurd.

¶[13] The parts of human learning have reference to the three parts of Man's Understanding, which is the seat of learning: History to his Memory, Poesy to his Imagination, and Philosophy to his Reason. Divine learning receiveth the same distribution; for the spirit of man is the same, though the revelation of oracle and sense be diverse: so as theology consisteth also of History of the Church; of Parables, which is divine poesy; and of holy Doctrine or precept. For as for that part which seemeth supernumerary, which is Prophecy, it is but divine history; which hath that prerogative over human, as the narration may be before the fact as well as after.

¶[14] History is Natural, Civil, Ecclesiastical, and Literary; whereof the three first I allow as extant, the fourth I note as deficient. For no man hath propounded to himself the general state of learning to be described and represented from age to age, as many have done the works of nature and the state civil and ecclesiastical; without which the history

Historia Literarum.

[11] *infelicitates.*—De Aug.

[12] *i.e.* cultivated.

[13] De Aug. ii. 1. The substance of the following paragraph will be found considerably expanded in the first chapter of the *Descriptio Globi Intellectualis*, and set forth much more clearly and orderly in the first chapter of the second book of the *De Augmentis;* which begins here; the previous observations being introductory. As it may be convenient to the reader to have the means of referring at once to the corresponding passages of the more finished work, I shall mark with a ¶ the places where the several chapters begin; adding (where the case admits of it) some notice, more or less complete, of the differences between the two. See Preface.

[14] De Aug. ii. 4. In the translation the divisions are altered: History being divided into Natural and Civil,—History of Nature and History of Man; and Literary and Ecclesiastical History being considered as separate departments of the latter. See chap. 2. paragraph 1. This alteration induces an alteration in the order of treatment; the precedence being given to the History of Nature, which is the subject of the second chapter.

of the world seemeth to me to be as the statue of Polyphemus with his eye out; that part being wanting which doth most shew the spirit and life of the person. And yet I am not ignorant that in divers particular sciences, as of the jurisconsults, the mathematicians, the rhetoricians, the philosophers, there are set down some small memorials of the schools, authors, and books; and so likewise some barren relations touching the invention of arts or usages. But a just story of learning, containing the antiquities and originals of knowledges, and their sects; their inventions, their traditions; their diverse administrations and managings; their flourishings, their oppositions, decays, depressions, oblivions, removes; with the causes and occasions of them, and all other events concerning learning, throughout the ages of the world [15]; I may truly affirm to be wanting. The use and end of which work I do not so much design for curiosity, or satisfaction of those that are the lovers of learning; but chiefly for a more serious and grave purpose, which is this in few words, that it will make learned men wise in the use and administration of learning. For it is not St. Augustine's nor St. Ambrose works that will make so wise a divine, as ecclesiastical history throughly read and observed; and the same reason is of learning.

¶ [16] History of Nature is of three sorts; of nature in course, of nature erring or varying, and of nature altered or wrought; that is, history of Creatures, history of Marvels, and history of Arts.[17] The first of these no doubt is extant, and that in good perfection; the two later are handled so weakly and unprofitably, as I am moved to note them as deficient. For I find no sufficient or competent collection of the works of nature which have a digression and deflexion from the ordinary course of generations, productions, and motions; whether they be singularities of place and region, or the strange events of time and chance, or the effects of yet unknown proprieties, or the instances of exception to general kinds. It is true, I find a number of books of fabulous experiments and secrets, and frivolous impostures for pleasure and strangeness. But a substantial and severe collection of the Heteroclites or Irregulars of nature, well examined and described, I find not; specially not with due rejection of fables and popular errors; for as things now are, if an untruth in nature be once on foot, what by reason of the neglect of examination and countenance of antiquity, and what by reason of the use of the opinion in similitudes and ornaments of speech, it is never called down.

Historia Naturæ Errantis.

The use of this work, honoured with a precedent in Aristotle [18], is nothing less than to give contentment to the appetite of curious and vain wits, as the manner of Mirabilaries is to do; but for two reasons, both of great weight; the one to correct the partiality of axioms and opinions, which are commonly framed only upon common and familiar examples; the other because from the wonders of nature is the nearest intelligence and passage towards the wonders of art; for it is no more but by following and as it were hounding Nature in her wanderings, to be able to lead her afterwards to the same place again. Neither am I of opinion, in this History of Marvels, that superstitious narrations of sorceries, witchcrafts, dreams, divinations, and the like, where there is an assurance and clear evidence of the fact, be altogether excluded. For it is not yet known in what cases, and how far, effects attributed to superstition do participate of natural causes; and therefore howsoever the practice of such things is to be condemned, yet from the speculation and consideration of them light may be taken, not only for the discerning of the offences, but for the further disclosing of nature. Neither ought a man to make scruple of entering into these things for inquisition of truth, as your Majesty hath shewed in your own example; who with the two clear eyes of religion and natural philosophy have looked deeply

[15] The description of the required history is set forth much more particularly in the translation; and the whole paragraph rewritten and enlarged. [16] De Aug. ii. 2.

[17] This division is retained in the translation, but the exposition of it is extended into a long paragraph.

[18] De Miris Auscultationibus; which is now however generally admitted to be not Aristotle's.—*R. L. E.* See De Aug. ii. 2. Mr. Blakesley is of opinion that the nucleus of it was probably Aristotle's, but that it has been added to by subsequent writers.

and wisely into these shadows, and yet proved yourself to be of the nature of the sun, which passeth through pollutions and itself remains as pure as before. But this I hold fit, that these narrations which have mixture with superstition be sorted by themselves, and not to be mingled with the narrations which are merely and sincerely natural. But as for the narrations touching the prodigies and miracles of religions, they are either not true or not natural; and therefore impertinent for the story of nature.

Historia Mechanica.

For History of Nature Wrought or Mechanical, I find some collections made of agriculture, and likewise of manual arts; but commonly with rejection of experiments familiar and vulgar. For it is esteemed a kind of dishonour unto learning to descend to inquiry or meditation upon matters mechanical, except they be such as may be thought secrets, rarities and special subtilties; which humour of vain and supercilious arrogancy is justly derided in Plato; where he brings in Hippias, a vaunting sophist, disputing with Socrates, a true and unfeigned inquisitor of truth; where the subject being touching beauty, Socrates, after his wandering manner of inductions, put first an example of a fair virgin,and then of a fair horse, and then of a fair pot well glazed, whereat Hippias was offended, and said, *More than for courtesy's sake, he did think much to dispute with any that did allege such base and sordid instances*: whereunto Socrates answereth, *You have reason, and it becomes you well, being a man so trim in your vestiments*, etc. and so goeth on in an irony. But the truth is, they be not the highest instances that give the securest information; as may be well expressed in the tale so common of the philosopher, that while he gazed upwards to the stars fell into the water; for if he had looked down he might have seen the stars in the water, but looking aloft he could not see the water in the stars. So it cometh often to pass that mean and small things discover great better than great can discover the small; and therefore Aristotle noteth well, *that the nature of every thing is best seen in his smallest portions*, and for that cause he inquireth the nature of a commonwealth, first in a family, and the simple conjugations of man and wife, parent and child, master and servant, which are in every cottage: even so likewise the nature of this great city of the world and the policy thereof must be first sought in mean concordances and small portions. So we see how that secret of nature, of the turning of iron touched with the loadstone towards the north, was found out in needles of iron, not in bars of iron.

But if my judgment be of any weight, the use of History Mechanical is of all others the most radical and fundamental towards natural philosophy; such natural philosophy as shall not vanish in the fume of subtile, sublime, or delectable speculation, but such as shall be operative to the endowment and benefit of man's life; for it will not only minister and suggest for the present many ingenious practices in all trades, by a connexion and transferring of the observations of one art to the use of another, when the experiences of several mysteries shall fall under the consideration of one man's mind; but further it will give a more true and real illumination concerning causes and axioms than is hitherto attained. For like as a man's disposition is never well known till he be crossed, nor Proteus ever changed shapes till he was straitened and held fast; so the passages and variations of nature cannot appear so fully in the liberty of nature, as in the trials and vexations of art [19].

¶ [20] For Civil History, it is of three kinds [21]; not unfitly to be compared with the three kinds of pictures or images. For of pictures or images, we see some

[19] A paragraph is added in the translation, to say that not the mechanical arts only, but also the practical part of the liberal sciences, as well as many crafts which have not grown into formal arts (such, he means, as hunting, fishing, &c.), are to be included in the History Mechanical.

[20] De Aug. ii. 6. The 3rd chapter, concerning the two uses of natural history, and the 5th, concerning the dignity and difficulty of civil history, have nothing corresponding to them here.

[21] " I am not altogether ignorant in the laws of history and of the kinds. The same

are unfinished, some are perfect[22], and some are defaced. So of histories we may find three kinds, Memorials, Perfect Histories, and Antiquities; for Memorials are history unfinished, or the first or rough draughts of history, and Antiquities are history defaced, or some remnants of history which have casually escaped the shipwreck of time.

Memorials, or Preparatory History, are of two sorts; whereof the one may be termed Commentaries, and the other Registers. Commentaries are they which set down a continuance of the naked events and actions, without the motives or designs, the counsels, the speeches, the pretexts, the occasions, and other passages of action: for this is the true nature of a Commentary; though Cæsar, in modesty mixed with greatness, did for his pleasure apply the name of a Commentary to the best history of the world. Registers are collections of public acts, as decrees of council, judicial proceedings, declarations and letters of estate, orations, and the like, without a perfect continuance or contexture of the thread of the narration.

Antiquities or Remnants of History are, as was said, *tanquam tabula naufragii* [like the planks of a shipwreck]; when industrious persons by an exact and scrupulous diligence and observation, out of monuments, names, words, proverbs, traditions, private records and evidences, fragments of stories, passages of books that concern not story, and the like, do save and recover somewhat from the deluge of time.

In these kinds of unperfect histories I do assign no deficience, for they are *tanquam imperfecte mista* [things imperfectly compounded]; and therefore any deficience in them is but their nature. As for the corruptions and moths of history, which are Epitomes, the use of them deserveth to be banished, as all men of sound judgment have confessed; as those that have fretted and corroded the sound bodies of many excellent histories, and wrought them into base and unprofitable dregs.

¶ [23] History which may be called Just and Perfect History is of three kinds, according to the object which it propoundeth, or pretendeth to represent: for it either representeth a Time, or a Person, or an Action. The first we call Chronicles, the second Lives, and the third Narrations or Relations. Of these, although the first be the most complete and absolute kind of history and hath most estimation and glory, yet the second excelleth it in profit and use, and the third in verity and sincerity. For History of Times representeth the magnitude of actions and the public faces and deportments of persons, and passeth over in silence the smaller passages and motions of men and matters. But such being the workmanship of God as he doth hang the greatest weight upon the smallest wires, *maxima e minimis suspendens*, it comes therefore to pass, that such histories do rather set forth the pomp of business than the true and inward resorts thereof[24]. But Lives, if they be well written[25], propounding to themselves a person to represent in whom actions both greater and smaller, public and private, have a commixture, must of necessity contain a more true, native, and lively representation. So again Narrations and Relations of actions, as the War of Peloponnesus, the Expedition of Cyrus Minor, the Conspiracy of Catiline, cannot but be more purely and exactly true than Histories of Times, because they may choose an argument comprehensible within the notice and instruc-

hath been taught by many, but by no man better and with greater brevity than by that excellent learned gentleman Sir Francis Bacon."—*Raleigh*: Preface to the *History of the World.—R. L. E.*

[22] *parfite* in the original; the form in which the word was commonly written in Bacon's time.

[23] De Aug. ii. 7.

[24] And even (he adds in the translation) where they attempt to give the counsels and motives, yet still out of the same love of dignity and greatness they introduce into men's actions more gravity and wisdom than they really have; insomuch that you may find a truer picture of human life in some satires than in such histories.

[25] *i.e.* not mere eulogies. The tranlations adds: "neque enim de elogiis et hujusmodi commemorationibus jejunis loquimur."

tions of the writer: whereas he that undertaketh the story of a time, especially of any length, cannot but meet with many blanks and spaces which he must be forced to fill up out of his own wit and conjecture [26].

For the History of Times, (I mean of civil history) the providence of God hath made the distribution: for it hath pleased God to ordain and illustrate two exemplar states of the world, for arms, learning, moral virtue, policy, and laws; the state of Græcia, and the state of Rome; the histories whereof occupying the middle part of time, have more ancient to them, histories which may by one common name be termed the Antiquities of the World; and after them, histories which may be likewise called by the name of Modern History [27].

Now to speak of the deficiencies. As to the Heathen Antiquities of the world, it is in vain to note them for deficient. Deficient they are no doubt, consisting most of fables and fragments; but the deficience cannot be holpen; for antiquity is like fame, *caput inter nubila condit*, her head is muffled from our sight. For the History of the Exemplar States, it is extant in good perfection. Not but I could wish there were a perfect course of history for Græcia from Theseus to Philopœmen, (what time the affairs of Græcia drowned and extinguished in the affairs of Rome); and for Rome from Romulus to Justinianus, who may be truly said to be *ultimus Romanorum*. In which sequences of story the text of Thucydides and Xenophon in the one, and the texts of Livius, Polybius, Sallustius, Cæsar, Appianus, Tacitus, Herodianus in the other, to be kept entire without any diminution at all, and only to be supplied and continued. But this is matter of magnificence, rather to be commended than required: and we speak now of parts of learning supplemental, and not of supererogation.

But for Modern Histories, whereof there are some few very worthy, but the greater part beneath mediocrity, leaving the care of foreign stories to foreign states, because I will not be *curiosus in aliena republica* [a meddler in other nations' matters], I cannot fail to represent to your Majesty the unworthiness of the history of England in the main continuance thereof, and the partiality and obliquity of that of Scotland in the latest and largest author that I have seen; supposing that it would be honour for your Majesty and a work very memorable, if this island of Great Britain [28], as it is now joined in monarchy for the ages to come, so were joined in one history for the times passed; after the manner of the sacred history, which draweth down the story of the ten Tribes and of the Two tribes as twins together. And if it shall seem that the greatness of this work may make it less exactly performed, there is an excellent period of a much smaller compass of time as to the story of England; that is to say, from the Uniting of the Roses to the Uniting of the Kingdoms; a portion of time wherein, to my understanding, there hath been the rarest varieties that in like number of successions of any hereditary monarchy hath been known.

For it beginneth with the mixed adeption of a crown, by arms and title; an entry by battle, an establishment by marriage; and therefore times answerable, like waters after a tempest, full of working and swelling, though without extremity of storm; but well passed through by the wisdom of the pilot, being one of the most sufficient kings of all the number. Then followeth the reign of a king, whose actions, howsoever conducted [29], had much intermixture with

[26] On the other hand it must be confessed (he reminds us in the translation,—I give only the general import of the passage, which is of considerable length) that relations of this kind, especially if published near the time to which they refer, are in one respect of all narratives the most to be suspected; being commonly written either in favour or in spite. But then again it seldom happens that they are all on one side, so that the extreme views of each party being represented, an honest and judicious historian may, when the violence of faction has cooled down with time, find the truth among them.

[27] This paragraph and the next are omitted in the translation, and their place supplied by a general complaint that very many particular histories are still wanting; much to the injury in honour and reputation of the kingdoms and commonwealths which they concern.

[28] Spelt *Brittanie* in the original; *Brittany* in edd. 1629 and 1633.

[29] The distinction between the father and the son is more clearly marked in the trans-

the affairs of Europe, balancing and inclining them variably; in whose time also began that great alteration in the state ecclesiastical, an action which seldom cometh upon the stage: then the reign of a minor: then an offer of an usurpation, though it was but as *febris ephemera* [a diary ague]: then the reign of a queen matched with a foreigner: then of a queen that lived solitary and unmarried, and yet her government so masculine as it had greater impression and operation upon the states abroad than it any ways received from thence[30]: and now last, this most happy and glorious event, that this island of Britain, divided from all the world, should be united in itself; and that oracle of rest given to Æneas, *Antiquam exquirite matrem* [seek out your ancient mother], should now be performed and fulfilled upon the nations of England and Scotland, being now reunited in the ancient mother name of Britain, as a full period of all instability and peregrinations: so that as it cometh to pass in massive bodies, that they have certain trepidations and waverings before they fix and settle; so it seemeth that by the providence of God this monarchy, before it was to settle in your Majesty and your generations, (in which I hope it is now established for ever), it had these prelusive changes and varieties.

For Lives, I do find strange that these times have so little esteemed the virtues of the times, as that the writing of lives should be no more frequent. For although there be not many sovereign princes or absolute commanders, and that states are more collected into monarchies, yet are there many worthy personages that deserve better than dispersed report or barren eulogies. For herein the invention of one of the late poets[31] is proper, and doth well enrich the ancient fiction: for he feigneth that at the end of the thread or web of every man's life there was a little medal containing the person's name, and that Time waited upon the shears, and as soon as the thread was cut, caught the medals and carried them to the river of Lethe; and about the bank there were many birds flying up and down, that would get the medals and carry them in their beak a little while, and then let them fall into the river: only there were a few swans, which if they got a name, would carry it to a temple where it was consecrated. And although many men more mortal in their affections than in their bodies, do esteem desire of name and memory but as a vanity and ventosity,

Animi nil magnæ laudis egentes

[souls that have no care for praise]; which opinion cometh from that root, *non puris laudes contempsimus, quam laudanda facere desivimus* [men hardly despise praise till they have ceased to deserve it]; yet that will not alter Salomon's judgment, *Memoria justi cum laudibus, at impiorum nomen putrescet* [the memory of the just is blessed; but the name of the wicked shall rot]; the one flourisheth, the other either consumeth to present oblivion, or turneth to an ill odour. And therefore in that style or addition, which is and hath been long well received and brought in use, *felicis memoriæ, piæ memoriæ, bonæ memoriæ* [of happy, of pious, of good memory], we do acknowledge that which Cicero saith, borrowing it from Demosthenes, that *bona fama propria possessio defunctorum*[32] [good fame is all that a dead man can possess]; which possession I cannot but note that in our times it lieth much waste, and that therein there is a deficience.

For Narrations and Relations of particular actions, there were also to be wished a greater diligence therein; for there is no great action but hath some good pen which attends it. And because it is an ability not common to write a good history, as may well appear by the small number of them; yet if particularity of actions memorable were but tolerably reported as they pass, the com-

ation. Of Henry VII. he says *qui unus inter antecessores reges* consilio *enituit;* of Henry VIII.'s actions, *licet magis impetu quam consilio administratæ.* Had Bacon gone on with his history of Henry VIII. it would have been curious to contrast the portrait of the son governing more by passion than policy, with that of the father governing by policy without passion.

[30] This last clause is omitted in the *De Augmentis*. See note p. 50.

[31] Ariosto, *Orlando Furioso*, at the end of the 34th and the beginning of the 35th books.

[32] Compare Cicero, Philippic. 9. 5., with the opening of the λόγος ἐπιτάφιος, 1389–10.

piling of a complete History of Times might be the better expected, when a writer should arise that were fit for it; for the collection of such relations might be as a nursery garden, whereby to plant a fair and stately garden when time should serve.

¶ [33] There is yet another portion of history which Cornelius Tacitus maketh, which is not to be forgotten, specially with that application which he accoupleth it withal, Annals and Journals: appropriating to the former matters of estate, and to the later acts and accidents of a meaner nature. For giving but a touch of certain magnificent buildings, he addeth, *Cum ex dignitate populi Romani repertum sit, res illustres annalibus, talia diurnis urbis actis mandare* [that it had been thought suitable to the dignity of the Roman people to enter in their *annals* only matters of note and greatness; leaving such things as these to the *journal records* of the city]. So as there is a kind of contemplative heraldry, as well as civil. And as nothing doth derogate from the dignity of a state more than confusion of degrees; so it doth not a little embase the authority of an history, to intermingle matters of triumph or matters of ceremony or matters of novelty with matters of state. But the use of a Journal hath not only been in the history of times [34], but likewise in the history of persons, and chiefly of actions; for princes in ancient time had, upon point of honour and policy both, journals kept of what passed day by day; for we see the Chronicle which was read before Ahasuerus [35], when he could not take rest, contained matter of affairs indeed, but such as had passed in his own time, and very lately before: but the Journal of Alexander's house expressed a very small particularity, even concerning his person and court [36]; and it is yet an use well received in enterprises memorable, as expeditions of war, navigations, and the like, to keep diaries of that which passeth continually.

¶ [37] I cannot likewise be ignorant of a form of writing which some grave and wise men have used, containing a scattered history of those actions which they have thought worthy of memory, with politic discourse and observation thereupon; not incorporate into the history, but separately, and as the more principal in their intention; which kind of Ruminated History I think more fit to place amongst books of policy, whereof we shall hereafter speak, than amongst books of history [38]; for it is the true office of history to represent the events themselves together with the counsels, and to leave the observations and conclusions thereupon to the liberty and faculty of every man's judgment. But mixtures are things irregular, whereof no man can define.

So also is there another kind of history manifoldly mixed, and that is History of Cosmography: being compounded of natural history, in respect of the regions themselves; of history civil, in respect of the habitations, regiments, and manners of the people; and the mathematics, in respect of the climates and configurations towards the heavens: which part of learning of all others in this latter time hath obtained most proficience. For it may be truly affirmed to the honour of these times, and in a virtuous emulation with antiquity, that this great building of the world had never through-lights made in it, till the age of us and our fathers; for although they had knowledge of the antipodes,

[33] De Aug. ii. 9. Between this paragraph and the last there is introduced in the translation a chapter on the advantages and disadvantages of histories of the world, as distinguished from histories of particular countries.

[34] *time* in the original and also in edd. 1629 and 1633. The translation omits this clause. [35] Esther, vi. 1.

[36] Not that greater matters were excluded: but great and small were entered promiscuously as they occurred. (*Neque enim sicut annales tantum gravia, ita diaria tantum levia complexa sunt; sed omnia promiscue et cursim diariis excipiebantur, seu majoris seu minoris momenti.*) [37] De Aug. ii. 10.

[38] This remark is omitted in the translation, and another substituted, to the effect that this kind of ruminated history is an excellent thing, provided it be understood that the matter in hand is not history but observations upon history (*modo hujusmodi scriptor hoc agat et hoc se agere confiteatur*); for in a regular history the narrative ought not, he says, to be interrupted by comments of this kind. It should be pregnant with politic precepts, but the writer should not play the midwife.

> Nosque ubi primus equis oriens afflavit anhelis,
> Illic sera rubens accendit lumina Vesper
>
> [And while on us the fresh East breathes from far,
> For them the red West lights her evening star]:

yet that might be by demonstration, and not in fact; and if by travel, it requireth the voyage but of half the globe. But to circle the earth, as the heavenly bodies do, was not done nor enterprised till these later times: and therefore these times may justly bear in their word, not only *plus ultra*, in precedence of the ancient *non ultra*, and *imitabile fulmen* in precedence of the ancient *non imitabile fulmen*,

> Demens qui nimbos et non imitabile fulmen, etc.

but likewise *imitabile cœlum*; in respect of the many memorable voyages, after the manner of heaven, about the globe of the earth.

And this proficience in navigation and discoveries may plant also an expectation of the further proficience and augmentation of all sciences; because it may seem they are ordained by God to be coevals, that is, to meet in one age. For so the prophet Daniel speaking of the latter times foretelleth, *Plurimi pertransibunt, et multiplex erit scientia* [many shall pass to and fro, and knowledge shall be multiplied]: as if the openness and through passage of the world and the increase of knowledge were appointed to be in the same ages; as we see it is already performed in great part; the learning of these later times not much giving place to the former two periods or returns of learning, the one of the Grecians, the other of the Romans.

¶ [39] History Ecclesiastical receiveth the same divisions with History Civil: but further in the propriety thereof may be divided into History of the Church, by a general name; History of Prophecy; and History of Providence. The first describeth the times of the militant church; whether it be fluctuant, as the ark of Noah; or moveable, as the ark in the wilderness; or at rest, as the ark in the temple; that is, the state of the church in persecution, in remove, and in peace. This part I ought in no sort to note as deficient; only I would that the virtue and sincerity of it were according to the mass and quantity. But I am not now in hand with censures, but with omissions.

The second, which is History of Prophecy, consisteth of two relatives, the prophecy and the accomplishment; and therefore the nature of such a work ought to be, that every prophecy of the scripture be sorted with the event fulfilling the same, throughout the ages of the world; both for the better confirmation of faith, and for the better illumination of the Church touching those parts of prophecies which are yet unfulfilled; allowing nevertheless that latitude which is agreeable and familiar unto divine prophecies; being of the nature of their author, with whom a thousand years are but as one day; and therefore are not fulfilled punctually at once, but have springing and germinant accomplishment throughout many ages, though the height or fulness of them may refer to some one age. This is a work which I find deficient, but is to be done with wisdom, sobriety, and reverence, or not at all.

Historia Prophetica

The third, which is History of Providence, containeth that excellent correspondence which is between God's revealed will and his secret will; which though it be so obscure as for the most part it is not legible to the natural man; no, nor many times to those that behold it from the tabernacle; yet at some times it pleaseth God, for our better establishment and the confuting of those which are as without God in the world, to write it in such text and capital letters that, as the prophet saith, *he that runneth by may read it* [40]; that is, mere sensual per-

[39] De Aug. ii. 11.

[40] Habak. ii. 2. Mr. Ellis has remarked in his note on the corresponding passage in the *De Augmentis* that this expression, now so familiar and almost proverbial, is in fact a misquotation of the text and a misrepresentation of the meaning of the prophet.

sons, which hasten by God's judgments and never bend or fix their cogitations upon them, are nevertheless in their passage and race urged to discern it. Such are the notable events and examples of God's judgments, chastisements, deliverances, and blessings. And this is a work which hath passed through the labour of many [41], and therefore I cannot present as omitted.

¶ [42] There are also other parts of learning which are Appendices to history. For all the exterior proceedings of man consist of words and deeds; whereof history doth properly receive and retain in memory the deeds; and if words, yet but as inducements and passages to deeds; so are there other books and writings, which are appropriate to the custody and receit of words only; which likewise are of three sorts; Orations, Letters, and Brief Speeches or Sayings. Orations are pleadings, speeches of counsel; laudatives, invectives, apologies, reprehensions; orations of formality or ceremony, and the like. Letters are according to all the variety of occasions; advertisements, advices, directions, propositions, petitions, commendatory, expostulatory, satisfactory, of compliment, of pleasure, of discourse, and all other passages of action. And such as are written from wise men are, of all the words of man, in my judgment the best; for they are more natural than orations and public speeches, and more advised than conferences or present speeches. So again letters of affairs from such as manage them or are privy to them are of all others the best instructions for history, and to a diligent reader the best histories in themselves. For Apophthegms, it is a great loss of that book of Cæsar's; for as his history and those few letters of his which we have and those apophthegms which were of his own excel all men's else, so I suppose would his collection of Apophthegms have done; for as for those which are collected by others, either I have no taste in such matters, or else their choice hath not been happy [43]. But upon these three kinds of writings I do not insist, because I have no deficiences to propound concerning them.

Thus much therefore concerning History; which is that part of learning which answereth to one of the cells, domiciles, or offices of the mind of man; which is that of the Memory.

¶ [44] POESY is a part of learning in measure of words for the most part restrained, but in all other points extremely licensed, and doth truly refer to the Imagination; which, being not tied to the laws of matter, may at pleasure join that which nature hath severed, and sever that which nature hath joined, and so make unlawful matches and divorces of things: *Pictoribus atque poetis*, etc. [Painters and Poets have always been allowed to take what liberties they would]. It is taken in two senses, in respect of words or matter. In the first sense it is but a character of style, and belongeth to arts of speech, and is not pertinent for the present [45]. In the later, it is (as hath been said) one of the principal portions of learning, and is nothing else but Feigned History, which may be styled as well in prose as in verse.

"Write the vision and make it plain upon the tables that he may run that readeth it." It would be a curious inquiry, who first made this mistake.

[41] In the translation he says, "*sane in calamos nonnullorum piorum virorum incidit,* sed non sine partium studio." Indeed it is difficult to see how, without partiality, such a history of Providence could be written at all. For take any signal calamity and look at it in its historical character only,—who shall say whether it is a chastisement or a martyrdom? a judgment upon the sinner, or a trial of the saint? [42] De Aug. ii. 12.

[43] Some further remarks upon the value and use of Apophthegms are introduced in the *De Augmentis*; of these, a translation will be given in my preface to Bacon's own collection of Apophthegms.

[44] De Aug. ii. 13. The arrangement is partly altered in the translation, and much new matter introduced: among the rest, a whole paragraph concerning the true use and dignity of dramatic poetry, as a vehicle of moral instruction; which is connected in striking manner with the remark that men in bodies are more open to impressions than when alone.

[45] A sentence is added in the translation to explain that under this head satires, elegies, epigrams, and odes are included.

The use of this Feigned History hath been to give some shadow of satisfaction to the mind of man in those points wherein the nature of things doth deny it; the world being in proportion inferior to the soul; by reason whereof there is agreeable to the spirit of man a more ample greatness, a more exact goodness, and a more absolute variety, than can be found in the nature of things. Therefore, because the acts or events of true history have not that magnitude which satisfieth the mind of man, poesy feigneth acts and events greater and more heroical; because true history propoundeth the successes and issues of actions not so agreeable to the merits of virtue and vice, therefore poesy feigns them more just in retribution, and more according to revealed providence; because true history representeth actions and events more ordinary and less interchanged, therefore poesy endueth them with more rareness, and more unexpected and alternative variations. So as it appeareth that poesy serveth and conferreth to magnanimity, morality, and to delectation. And therefore it was ever thought to have some participation of divineness, because it doth raise and erect the mind, by submitting the shews of things to the desires of the mind; whereas reason doth buckle and bow the mind unto the nature of things. And we see that by these insinuations and congruities with man's nature and pleasure, joined also with the agreement and consort it hath with music, it hath had access and estimation in rude times and barbarous regions, where other learning stood excluded.

The division of poesy which is aptest in the propriety thereof, (besides those divisions which are common unto it with history, as feigned chronicles, feigned lives; and the appendices of history, as feigned orations, feigned epistles, and the rest), is into Poesy Narrative, Representative, and Allusive. The Narrative is a mere imitation of history, with the excesses before remembered; choosing for subject commonly wars and love, rarely state, and sometimes pleasure or mirth [46]. Representative is as a visible history, and is an image of actions as if they were present, as history is of actions in nature as they are, (that is) past. Allusive or Parabolical is a narration applied only to express some special purpose or conceit [47]. Which later kind of parabolical wisdom was much more in use in the ancient times, as by the fables of Æsop and the brief sentences of the Seven and the use of hieroglyphics may appear. And the cause was, for that it was then of necessity to express any point of reason which was more sharp or subtile than the vulgar in that manner; because men in those times wanted both variety of examples and subtilty of conceit: and as hieroglyphics were before letters, so parables were before arguments: and nevertheless now and at all times they do retain much life and vigour, because reason cannot be so sensible nor examples so fit.

But there remaineth yet another use of Poesy Parabolical, opposite to that which we last mentioned: for that tendeth to demonstrate and illustrate that which is taught or delivered, and this other to retire and obscure it: that is when the secrets and mysteries of religion, policy, or philosophy are involved in fables or parables. Of this in divine poesy we see the use is authorized. In heathen poesy we see the exposition of fables doth fall out sometimes with great felicity; as in the fable that the giants being overthrown in their war against the gods, the Earth their mother in revenge thereof brought forth Fame:

> Illam Terra parens, irâ irritata deorum,
> Extremam, ut perhibent, Cœo Enceladoque sororem
> Progenuit:

expounded that when princes and monarchs have suppressed actual and open rebels, then the malignity of people (which is the mother of rebellion) doth bring forth libels and slanders and taxations of the state, which is of the same kind with rebellion, but more feminine. So in the fable that the rest of the gods

[46] The last clause of this sentence is omitted in the translation.

[47] This obscure sentence is explained in the translation to mean that Parabolic Poesy is *historia cum typo, quæ intellectualia deducit ad sensum*,—typical history, by which ideas that are objects of the Intellect are represented in forms that are objects of the Sense.

having conspired to bind Jupiter, Pallas called Briareus with his hundred hands to his aid : expounded that monarchies need not fear any curbing of their absoluteness by mighty subjects, as long as by wisdom they keep the hearts of the people, who will be sure to come in on their side. So in the fable that Achilles was brought up under Chiron the Centaur, who was part a man and part a beast : expounded ingeniously but corruptly by Machiavel, that it belongeth to the education and discipline of princes to know as well how to play the part of the lion in violence and the fox in guile, as of the man in virtue and justice [48]. Nevertheless in many the like encounters, I do rather think that the fable was first, and the exposition devised, than that the moral was first, and thereupon the fable framed. For I find it was an ancient vanity in Chrysippus, that troubled himself with great contention to fasten the assertions of the Stoics upon the fictions of the ancient poets. But yet that all the fables and fictions of the poets were but pleasure and not figure, I interpose no opinion. Surely of those poets which are now extant, even Homer himself, (notwithstanding he was made a kind of Scripture by the later schools of the Grecians), yet I should without any difficulty pronounce that his fables had no such inwardness in his own meaning ; but what they might have upon a more original tradition, is not easy to affirm ; for he was not the inventor of many of them [49].

In this third part of learning, which is poesy, I can report no deficience. For being as a plant that cometh of the lust of the earth, without a formal seed, it hath sprung up and spread abroad more than any other kind. But to ascribe unto it that which is due ; for the expressing of affections, passions, corruptions, and customs, we are beholding to poets more than to the philosophers' works ; and for wit and eloquence not much less than to orators' harangues [50]. But it is not good to stay too long in the theatre. Let us now pass on to the judicial place or palace of the mind, which we are to approach and view with more reverence and attention.

¶ [51] The knowledge of man is as the waters, some descending from above, and some springing from beneath ; the one informed by the light of nature, the other inspired by divine revelation. The light of nature consisteth in the notions of the mind and the reports of the senses ; for as for knowledge which man receiveth by teaching, it is cumulative and not original ; as in a water that besides his own spring-head is fed with other springs and streams. So then according to these two different illuminations or originals, knowledge is first of all divided into Divinity and Philosophy.

In philosophy, the contemplations of man do either penetrate unto God, or are circumferred to Nature, or are reflected or reverted upon Himself. Out of which several inquiries there do arise three knowledges, Divine philosophy, Natural philosophy, and Human philosophy or Humanity. For all things are marked and stamped with this triple character, of the power of God, the difference of nature, and the use of man. But because the distributions and partitions of knowledge are not like several lines that meet in one angle, and so touch but in a point ; but are like branches of a tree that meet in a stem, which hath a dimension and quantity of entireness and continuance, before it come to discontinue and break itself into arms and boughs ;

[48] The Prince, c. 18. As two of the animals are the same, it is possible that Machiavelli was thinking of what was said of Boniface VIII. by the predecessor whom he forced to abdicate,—that he came in like a fox, would reign like a lion, and die like a dog.—*R. L. E.*

[49] For these examples there is substituted in the translation a full exposition of the three fables of Pan, Perseus, and Dionysus. And it is worth observing that, upon the question whether there was really a mystic sense at the bottom of the ancient fables, Bacon expresses in the translation a more decided inclination to the affirmative than he does here.

[50] This sentence is omitted in the translation.

[51] De Aug. iii. 1. The order of this chapter is changed in the translation, and a good deal added.

therefore it is good, before we enter into the former distribution, to erect and constitute one universal science, by the name of *Philosophia Prima*, Primitive or Summary Philosophy, as the main and common way, before we come where the ways part and divide themselves; which science whether I should report as deficient or no, I stand doubtful. For I find a certain rhapsody of Natural Theology, and of divers parts of Logic; and of that part of Natural Philosophy which concerneth the Principles, and of that other part of Natural Philosophy which concerneth the Soul or Spirit; all these strangely commixed and confused; but being examined, it seemeth to me rather a depredation of other sciences, advanced and exalted unto some height of terms[52], than any thing solid or substantive of itself. Nevertheless I cannot be ignorant of the distinction which is current, that the same things are handled but in several respects; as for example, that logic considereth of many things as they are in notion, and this philosophy as they are in nature; the one in appearance, the other in existence. But I find this difference better made than pursued. For if they had considered Quantity, Similitude, Diversity, and the rest of those Extern Characters of things, as philosophers, and in nature, their inquiries must of force have been of a far other kind than they are. For doth any of them, in handling Quantity, speak of the force of union, how and how far it multiplieth virtue? Doth any give the reason, why some things in nature are so common and in so great mass, and others so rare and in so small quantity? Doth any, in handling Similitude and Diversity, assign the cause why iron should not move to iron, which is more like, but more to the loadstone, which is less like? Why in all diversities of things there should be certain participles in nature, which are almost ambiguous to which kind they should be referred? But there is a mere and deep silence touching the nature and operation of those Common Adjuncts of things, as in nature; and only a resuming and repeating of the force and use of them in speech or argument. Therefore, because in a writing of this nature I avoid all subtility, my meaning touching this original or universal philosophy is thus, in a plain and gross description by negative: *That it be a receptacle for all such profitable observations and axioms as fall not within the compass of any of the special parts of philosophy or sciences, but are more common and of a higher stage.*

Now that there are many of that kind need not be doubted. For example is not the rule, *Si inæqualibus æqualia addas, omnia erunt inæqualia* [if equals be added to unequals, the wholes will be unequal], an axiom as well of justice as of the mathematics[53]? And is there not a true coincidence between commutative and distributive justice, and arithmetical and geometrical proportion? Is not that other rule, *Quæ in eodem tertio conveniunt, et inter se conveniunt*

[52] *Et sublimitate quadam sermonis hominum qui se ipsos admirari amant tanquam in vertice scientiarum collocatam.*—De Aug. The substance of the rest of this paragraph, till we come to the last sentence, is transferred to the end of the chapter in the *De Augmentis* and set forth more fully and clearly.

[53] This clause is printed out of its place both in the original and in the editions of 1629 and 1633; being inserted after the next sentence. It is obviously an error of the printer; but worth noticing as the evidence of imperfection of the arrangements then made for correcting the press. I am inclined to think that in Bacon's time the proof-sheets were never revised by the author.

In the translation we are told that the axiom holds with regard to *distributive* justice only. (*Eadem in Ethicis obtinet quatenus ad justitiam distributivam; siquidem in justitiâ commutativa, ut paria imparibus tribuantur ratio æquitatis postulat; at in distributiva, nisi imparia imparibus præstentur, iniquitas fuerit maxima.*) Equal measure distributed to unequal conditions produces an unequal result; a truth of which many striking illustrations are furnished by the operations of our own laws as between the rich and the poor, when the same penalty inflicted for the same offence falls heavily on the one and lightly on the other. In matter of *commutation*,—as in a question, for instance, of compensation for property destroyed,—this of course does not hold. The coincidence between commutative and distributive justice and arithmetical and geometrical proportion is not alluded to in the translation. But this may have been by accident; the translator perhaps not having observed where the misplaced sentence was meant to come in.

[things that are equal to the same are equal to each other], a rule taken from the mathematics, but so potent in logic as all syllogisms are built upon it? Is not the observation, *Omnia mutantur, nil interit* [all things change, but nothing is lost], a contemplation in philosophy thus, That the *quantum* of nature is eternal? in natural theology thus, That it requireth the same omnipotence to make somewhat nothing, which at the first made nothing somewhat? according to the scripture, *Didici quod omnia opera quæ fecit Deus perseverent in perpetuum; non possumus eis quicquam addere nec auferre* [I know that whatsoever God doeth, it shall be for ever; nothing can be put to it, nor anything taken from it]. Is not the ground, which Machiavel wisely and largely discourseth concerning governments, that the way to establish and preserve them is to reduce them *ad principia* [54], a rule in religion and nature [55] as well as in civil administration? Was not the Persian Magic a reduction or correspondence of the principles and architectures of nature to the rules and policy of governments? Is not the precept of a musician, to fall from a discord or harsh accord upon a concord or sweet accord, alike true in affection? Is not the trope of music, to avoid or slide from the close or cadence, common with the trope of rhetoric of deceiving expectation? Is not the delight of the quavering upon a stop in music the same with [56] the playing of light upon the water?

Splendet tremulo sub lumine pontus
[Beneath the trembling light glitters the sea].

Are not the organs of the senses of one kind with the organs of reflexion, the eye with a glass, the ear with a cave or strait determined and bounded [57]? Neither are these only similitudes, as men of narrow observation may conceive them to be, but the same footsteps of nature, treading or printing upon several subjects or matters. This science therefore (as I understand it) I may justly report as deficient; for I see sometimes the profounder sort of wits, in handling some particular argument, will now and then draw a bucket of water out of this well for their present use; but the spring-head thereof seemeth to me not to have been visited, being of so excellent use both for the disclosing of nature and the abridgment of art.

Philosophia Prima, sive de Fontibus Scientiarum.

¶ [58] This science being therefore first placed as a common parent, like unto Berecynthia, which had so much heavenly issue,

Omnes cœlicolas, omnes supera alta tenentes
[All dwellers in the heaven and upper sky]:

we may return to the former distribution of the three philosophies; Divine, Natural, and Human. And as concerning Divine philosophy or Natural Theology, it is that knowledge or rudiment of knowledge concerning God which may be obtained by the contemplation of his creatures; which knowledge may be truly termed divine in respect of the object, and natural in respect of the light. The bounds of this knowledge are, that it sufficeth to convince atheism, but not to inform religion: and therefore there was never miracle wrought by God to convert an atheist, because the light of nature might have led him to confess a God: but miracles have been wrought to convert idolaters and the superstitious, because no light of nature extendeth to declare the will and true worship of God. For as all works do shew forth the power and skill of the workman, and not his image; so it is of the works of God; which do shew the omnipotency and wisdom of the maker, but not his image: and therefore therein the heathen opinion differeth from the sacred truth; for they supposed the world to be the image of God, and man to be an extract or compendious image of the world; but the Scriptures never vouchsafe to attribute to the world that honour, as to be the image of God, but only *the work of his hands*; neither do they speak of any other image of God, but man. Wherefore by the contemplation of nature to induce

[54] Discorsi, iii. 1. [55] The translation says *in physics*, omitting the word *religion*.
[56] So ed. 1633. The original and the ed. 1629 have *which*.
[57] Some other instances are added in the translation. [58] De Aug. iii. 2.

and inforce the acknowledgement of God, and to demonstrate his power, providence, and goodness, is an excellent argument, and hath been excellently handled by divers. But on the other side, out of the contemplation of nature, or ground of human knowledges, to induce any verity or persuasion concerning the points of faith, is in my judgment not safe: *Da fidei quæ fidei sunt* [give unto Faith that which is Faith's]. For the Heathen themselves conclude as much in that excellent and divine fable of the golden chain: *That men and gods were not able to draw Jupiter down to the earth; but contrariwise, Jupiter was able to draw them up to heaven.* So as we ought not to attempt to draw down or submit the mysteries of God to our reason; but contrariwise to raise and advance our reason to the divine truth. So as in this part of knowledge touching divine philosophy, I am so far from noting any deficience, as I rather note an excess: whereunto I have digressed, because of the extreme prejudice which both religion and philosophy have received and may receive by being commixed together; as that which undoubtedly will make an heretical religion, and an imaginary and fabulous philosophy.

Otherwise it is of the nature of angels and spirits, which is an appendix of theology both divine and natural, and is neither inscrutable nor interdicted; for although the Scripture saith, *Let no man deceive you in sublime discourse touching the worship of angels, pressing into that he knoweth not*, etc. yet notwithstanding if you observe well that precept, it may appear thereby that there be two things only forbidden, adoration of them, and opinion fantastical of them; either to extol them further than appertaineth to the degree of a creature, or to extol a man's knowledge of them further than he hath ground. But the sober and grounded inquiry which may arise out of the passages of holy Scriptures, or out of the gradations of nature, is not restrained. So of degenerate and revolted spirits, the conversing with them or the employment of them is prohibited, much more any veneration towards them. But the contemplation or science of their nature, their power, their illusions, either by Scripture or reason, is a part of spiritual wisdom. For so the apostle said, *We are not ignorant of his stratagems*; and it is no more unlawful to inquire the nature of evil spirits than to enquire the force of poisons in nature, or the nature of sin and vice in morality. But this part touching angels and spirits, I cannot note as deficient, for many have occupied themselves in it; I may rather challenge it, in many of the writers thereof, as fabulous and fantastical.

¶ [59] Leaving therefore Divine Philosophy or Natural Theology (not Divinity or Inspired Theology, which we reserve for the last of all, as the haven and sabbath of all man's contemplations), we will now proceed to Natural Philosophy. If then it be true that Democritus said, *That the truth of nature lieth hid in certain deep mines and caves*; and if it be true likewise that the Alchemists do so much inculcate, that Vulcan is a second nature, and imitateth that dexterously and compendiously which nature worketh by ambages and length of time; it were good to divide natural philosophy into the mine and the furnace, and to make two professions or occupations of natural philosophers, some to be pioneers and some smiths; some to dig, and some to refine and hammer. And surely I do best allow of a division of that kind, though in more familiar and scholastical terms; namely, that these be the two parts of natural philosophy, — the Inquisition of Causes, and the Production of Effects; Speculative, and Operative; Natural Science, and Natural Prudence. For as in civil matters there is a wisdom of discourse and a wisdom of direction; so is it in natural. And here I will make a request, that for the latter (or at least for a part thereof) I may revive and reintegrate the misapplied and abused name of Natural Magic; which in the true sense is but Natural Wisdom, or Natural Prudence; taken according to the ancient acception, purged from vanity and superstition [60]. Now although it be true, and I know it well, that there is an intercourse between Causes and Effects, so as both these knowledges, Speculative and Operative, have a great connexion between themselves; yet because all true and fruitful Natural Philosophy hath a double scale or ladder, ascendent and descendent; ascending from

[59] De Aug. iii. 3.

[60] This request is omitted in the translation.

experiments to the invention of causes, and descending from causes to the invention of new experiments ; therefore I judge it most requisite that these two parts be severally considered and handled.

¶ [61] Natural Science or Theory is divided into Physic and Metaphysic : wherein I desire it may be conceived that I use the word Metaphysic in a differing sense from that that is received : and in like manner I doubt not but it will easily appear to men of judgment that in this and other particulars, wheresoever my conception and notion may differ from the ancient, yet I am studious to keep the ancient terms. For hoping well to deliver myself from mistaking by the order and perspicuous expressing of that I do propound, I am otherwise zealous and affectionate to recede as little from antiquity, either in terms or opinions, as may stand with truth and the proficience of knowledge. And herein I cannot a little marvel at the philosopher Aristotle, that did proceed in such a spirit of difference and contradiction towards all antiquity ; undertaking not only to frame new words of science at pleasure, but to confound and extinguish all ancient wisdom ; insomuch as he never nameth or mentioneth an ancient author or opinion, but to confute and reprove ; wherein for glory, and drawing followers and disciples, he took the right course. For certainly there cometh to pass and hath place in human truth, that which was noted and pronounced in the highest truth: *Veni in nomine Patris, nec recipitis me ; si quis venerit in nomine suo, eum recipietis* [I have come in my Father's name, and ye receive me not ; if one come in his own name, him ye will receive]. But in this divine aphorism (considering to whom it was applied, namely to Antichrist, the highest deceiver), we may discern well that *the coming in a man's own name*, without regard of antiquity or paternity, is no good sign of truth ; although it be joined with the fortune and success of an *Eum recipietis*. But for this excellent person [62] Aristotle, I will think of him that he learned that humour of his scholar, with whom it seemeth he did emulate, the one to conquer opinions as the other to conquer all nations. Wherein nevertheless, it may be, he may at some men's hands that are of a bitter disposition get a like title as his scholar did ;

> Felix terrarum prædo, non utile mundo
> Editus exemplum, etc.

[a fortunate robber, who made prize of nations]; so

> Felix doctrinæ prædo

[a fortunate robber, who made prize of learning]. But to me on the other side that do desire, as much as lieth in my pen, to ground a sociable intercourse [63] between antiquity and proficience, it seemeth best to keep way with antiquity *usque ad aras* [as far as may be without violating higher obligations] ; and therefore to retain the ancient terms, though I sometimes alter the uses and definitions ; according to the moderate proceeding in civil government, where although there be some alteration, yet that holdeth which Tacitus wisely noteth, *eadem magistratuum vocabula* [the name of the magistracies are not changed].

To return therefore to the use and acception of the term Metaphysic, as I do now understand the word : It appeareth by that which hath been already said, that I intend Philosophia Prima, Summary Philosophy, and Metaphysic, which heretofore have been confounded as one, to be two distinct things. For the one I have made as a parent or common ancestor to all knowledge, and the other I have now brought in as a branch or descendent of Natural Science. It appeareth likewise that I have assigned to Summary Philosophy the common principles and axioms which are promiscuous and indifferent to several sciences. I have assigned unto it likewise the inquiry *touching the operation of the relative and adventive characters of essences, as Quantity, Similitude, Diversity, Possibility*, and the rest ; with this distinction and provision ; that they be handled as they have efficacy in nature, and not logically. It appeareth likewise that Natural

[61] De Aug. iii. 4. [62] *viro tam eximio certe, et ob acumen ingenii mirabili.*—De Aug.
[63] *entercourse* in the original,—the form of the word commonly used by Bacon.

Theology, which heretofore hath been handled confusedly with Metaphysic, I have inclosed and bounded by itself. It is therefore now a question, what is left remaining for Metaphysic ; wherein I may without prejudice preserve thus much of the conceit of antiquity, that Physic should contemplate that which is inherent in matter and therefore transitory, and Metaphysic that which is abstracted and fixed. And again that Physic should handle that which supposeth in nature only a being and moving [64], and Metaphysic should handle that which supposeth further in nature a reason, understanding, and platform [65]. But the difference, perspicuously expressed, is most familiar and sensible. For as we divided Natural Philosophy in general into the Inquiry of Causes and Productions of Effects ; so that part which concerneth the Inquiry of Causes we do subdivide, according to the received and sound division of Causes ; the one part, which is Physic, enquireth and handleth the Material and Efficient Causes ; and the other, which is Metaphysic, handleth the Formal and Final Causes.

Physic (taking it according to the derivation, and not according to our idiom for Medicine,) is situate in a middle term or distance between Natural History and Metaphysic. For Natural History describeth the *variety of things ;* Physic the causes, but *variable or respective causes ;* and Metaphysic, the *fixed and constant causes.*

> Limus ut hic durescit, et hæc ut cera liquescit,
> Uno eodemque igni
> [As the same fire which makes the soft clay hard
> Makes hard wax soft] :

Fire is the cause of induration, but respective to clay ; fire is the cause of colliquation, but respective to wax ; but fire is no constant cause either of induration or colliquation. So then the physical causes are but the efficient and the matter. Physic hath three parts ; whereof two respect nature *united* or *collected*, the third contemplateth nature *diffused* or *distributed.* Nature is collected either into one entire *total*, or else into the same *principles* or *seeds.* So as the first doctrine is touching the Contexture or Configuration of things, as *de mundo, de universitate rerum.* The second is the doctrine concerning the Principles or Originals of things. The third is the doctrine concerning all Variety and Particularity of things, whether it be of the differing substances, or their differing qualities and natures ; whereof there needeth no enumeration, this part being but as a gloss or paraphrase, that attendeth upon the text of Natural History [66]. Of these three I cannot report any as deficient. In what truth or perfection they are handled, I make not now any judgment : but they are parts of knowledge not deserted by the labour of man.

For Metaphysic, we have assigned unto it the inquiry of Formal and Final Causes ; which assignation, as to the former of them, may seem to be nugatory and void, because of the received and inveterate opinion that the inquisition of man is not competent to find out *essential forms* or *true differences ;* of which opinion we will take this hold ; that the invention of Forms is of all other parts of knowledge the worthiest to be sought, if it be possible to be found. As for the possibility, they are ill discoverers that think there is no land when they can see nothing but sea. But it is manifest that Plato in his opinion of Ideas, as one that had a wit of elevation situate as upon a cliff, did descry *that forms were the true object of knowledge ;* but lost the real fruit of his opinion, by considering of forms as absolutely abstracted from matter, and not confined and determined by matter ; and so turning his opinion upon Theology, wherewith all his natural philosophy is infected. But if any man shall keep a continual watchful and severe eye upon action, operation, and the use of knowledge, he may advise and take notice what are the Forms, the disclosures whereof are fruitful and important to the state of man. For as to the Forms of substances—Man only except, of whom it is said, *Formavit hominem de limo terræ, et spiravit in faciem ejus spiraculum*

[64] The translation adds " and natural necessity."
[65] *ideam.* [66] On this branch of the subject there is a large addition of ten or twelve pages in the *De Augmentis.*

vitæ [He formed man of the dust of the ground, and breathed into his nostrils the breath of life], and not as of all other creatures, *Producant aquæ, producat terra* [let the waters bring forth, let the earth bring forth],—the Forms of Substances I say (as they are now by compounding and transplanting multiplied) are so perplexed, as they are not to be enquired [67]; no more than it were either possible or to purpose to seek in gross *the forms of those sounds which make words*, which by composition and transposition of letters are infinite. But on the other side, to enquire *the form of those sounds or voices which make simple letters* is easily comprehensible, and being known, induceth and manifesteth the forms of all words, which consist and are compounded of them. In the same manner to enquire the Form of a lion, of an oak, of gold, nay of water, of air, is a vain pursuit: but to enquire the Forms of sense, of voluntary motion, of vegetation, of colours, of gravity and levity, of density, of tenuity, of heat, of cold, and all other natures and qualities, which like an alphabet are not many, and of which the essences (upheld by matter) of all creatures do consist; to enquire I say the *true forms* of these, is that part of Metaphysic which we now define of. Not but that Physic doth make inquiry and take consideration of the same natures: but how? Only as to the Material and Efficient Causes of them, and not as to the Forms. For example; if the cause of Whiteness in snow or froth be enquired, and it be rendered thus, *that the subtile intermixture of air and water is the cause*, it is well rendered; but nevertheless, is this the Form of Whiteness? No; but it is the Efficient, which is ever but *vehiculum formæ* [the carrier of the Form] [68]. This part of Metaphysic I do not find laboured and performed; whereat I marvel not, because I hold it not possible to be invented by that course of invention which hath been used; in regard that men (which is the root of all error) have made too untimely a departure and too remote a recess from particulars.

Metaphysica, sive De Formis et Finibus Rerum.

But the use of this part of Metaphysic which I report as deficient, is of the rest the most excellent in two respects; the one, because it is the duty and virtue of all knowledge to abridge the infinity of individual experience as much as the conception of truth will permit, and to remedy the complaint of *vita brevis, ars longa* [life is short and art is long]; which is performed by uniting the notions and conceptions of sciences [69]. For knowledges are as pyramides, whereof history is the basis: so of Natural Philosophy the basis is Natural History; the stage next the basis is Physic; the stage next the vertical point is Metaphysic. As for the vertical point, *Opus quod operatur Deus à principio usque ad finem* [the work which God worketh from the beginning to the end], the Summary Law of Nature, we know not whether man's inquiry can attain unto it. But these three be the true *stages* of knowledge; and are to them that are depraved no better than the giants' hills [Pelion, Ossa, and Olympus, piled upon each other],

> Ter sunt conati imponere Pelio Ossam,
> Scilicet atque Ossæ frondosum involvere Olympum:

but to those which refer all things to the glory of God, they are as the three acclamations, *Sancte, sancte, sancte;* holy in the description or dilatation of his works, holy in the connection or concatenation of them, and holy in the union of them in a perpetual and uniform law. And therefore the speculation was excellent in Parmenides and Plato, although but a speculation in them, That all things by scale did ascend to unity. So then always that knowledge is worthiest, which is charged with least multiplicity; which appeareth to be Metaphysic; as that which considereth the Simple Forms of Differences of things, which are few in number, and the degrees and co-ordinations whereof make all this variety. The second respect which valueth and commendeth this part of Metaphysic, is that it

[67] Or at least (adds the translation) the enquiry must be put off till forms of simpler nature have been discovered.

[68] A sentence is added here in the translation; see note on *Valerius Terminus*, c. 11.

[69] *i.e.* collecting them into axioms more general, applicable to all the individual varieties: (*axiomata scientiarum in magis generalia, et quæ omni materiæ rerum individuarum competant, colligendo et uniendo*).

doth enfranchise the power of man unto the greatest liberty and possibility of works and effects. For Physic carrieth men in narrow and restrained ways, subject to many accidents of impediments, imitating the ordinary flexuous courses of nature; but *latæ undique sunt sapientibus viæ*: to sapience (which was anciently defined to be *rerum divinarum et humanarum scientia* [the knowledge of things human and divine]), there is ever choice of means. For physical causes give light to new invention *in simili materia*; but whosoever knoweth any *form* knoweth the utmost possibility of *superinducing that nature upon any variety of matter*, and so is less restrained in operation, either to the basis of the Matter, or the condition of the Efficient: which kind of knowledge Salomon likewise, though in a more divine sense, elegantly described: *Non arctabuntur gressus tui, et currens non habebis offendiculum* [thy steps shall not be straitened; thou shalt run and not stumble]. The ways of sapience are not much liable either to particularity or chance [70].

The second part of Metaphysic is the inquiry of *final* causes, which I am moved to report not as omitted, but as misplaced [71]. And yet if it were but a fault in order, I would not speak of it; for order is matter of illustration, but pertaineth not to the substance of sciences: but this misplacing hath caused a deficience, or at least a great inproficience in the sciences themselves. For the handling of final causes mixed with the rest in physical inquiries, hath intercepted the severe and diligent inquiry of all real and physical causes, and given men the occasion to stay upon these satisfactory and specious causes, to the great arrest and prejudice of further discovery. For this I find done not only by Plato, who ever anchoreth upon that shore, but by Aristotle, Galen, and others, which do usually likewise fall upon these flats of *discoursing causes*. For to say that *the hairs of the eye-lids are for a quickset and fence about the sight*; or that *the firmness of the skins and hides of living creatures is to defend them from the extremities of heat or cold*; or that *the bones are for the columns or beams, whereupon the frames of the bodies of living creatures are built*; or that *the leaves of trees are for protecting of the fruit*; or that *the clouds are for watering of the earth*; or that *the solidness of the earth is for the station and mansion of living creatures*, and the like, is well enquired and collected in Metaphysic; but in Physic they are impertinent. Nay, they are indeed but remoras and hinderances to stay and slug the ship from further sailing, and have brought this to pass, that the search of the Physical Causes hath been neglected and passed in silence. And therefore the natural philosophy of Democritus and some others, who did not suppose a mind or reason in the frame of things, but attributed *the form thereof able to maintain itself to infinite essays or proofs of nature*, which they term *fortune*, seemeth to me (as far as I can judge by the recital and fragments which remain unto us) in particularities of physical causes more real and better enquired than that of Aristotle and Plato; whereof both intermingled final causes, the one as a part of theology, and the other as a part of logic, which were the favourite studies respectively of both those persons. Not because those final causes are not true, and worthy to be enquired, being kept within their own province; but because their excursions into the limits of physical causes hath bred a vastness and solitude in that track. For otherwise keeping their precincts and borders, men are extremely deceived if they think there is an enmity or repugnancy at all between them. For the cause rendered, that *the hairs about the eye-lids are for the safeguard of the sight*, doth not impugn the cause rendered, that *pilosity is incident to orifices of moisture*; *Muscosi fontes* [the mossy springs], etc. Nor the cause rendered, that *the firmness of hides is for the armour of the body again against extremities of heat or cold*, doth not impugn the cause rendered, that *contraction of pores is incident to the outwardest parts, in regard of their adjacence to foreign or unlike bodies*; and so of the rest: both causes being true and compatible, the one declaring an intention, the other a consequence only. Neither doth this call in question or derogate from divine providence, but highly confirm and

[70] *i.e.* neither confined to particular methods, nor liable to be defeated by accidental obstructions. (*Nec angustiis nec obicibus obnoxias esse.*)

[71] *i.e.* placed in the department of Physic instead of Metaphysic. (*Solent enim inquiri inter Physica, non inter Metaphysica*).

exalt it. For as in civil actions he is the greater and deeper politique, that can make other men the instruments of his will and ends and yet never acquaint them with his purpose, so as they shall do it and yet not know what they do, than he that imparteth his meaning to those he employeth; so is the wisdom of God more admirable, when nature intendeth one thing and providence draweth forth another, than if he had communicated to particular creatures and motions the characters and impressions of his providence. And thus much for Metaphysic; the later part whereof I allow as extant, but wish it confined to its proper place.

¶ [72] Nevertheless there remaineth yet another part of Natural Philosophy, which is commonly made a principal part, and holdeth rank with Physic special and Metaphysic; which is Mathematic; but I think it more agreeable to the nature of things and to the light of order to place it as a branch of Metaphysic; for the subject of it being Quantity, not Quantity indefinite, which is but a relative and belongeth to *philosophia prima* (as hath been said), but Quantity determined or proportionable, it appeareth to be one of the Essential Forms of things; as that that is causative in nature of a number of effects; insomuch as we see in the schools both of Democritus and of Pythagoras, that the one *did ascribe figure to the first seeds of things*, and the other *did suppose numbers to be the principles and originals of things*; and it is true also that of all other forms (as we understand forms) it is the most abstracted and separable from matter, and therefore most proper to Metaphysic; which hath likewise been the cause why it hath been better laboured and enquired than any of the other forms, which are more immersed into matter. For it being the nature of the mind of man (to the extreme prejudice of knowledge) to delight in the spacious liberty of generalities, as in a champion * region, and not in the inclosures of particularity; the Mathematics of all other knowledge were the goodliest fields to satisfy that appetite. But for the placing of this science, it is not much material [73]: only we have endeavoured in these our partitions to observe a kind of perspective, that one part may cast light upon another.

The Mathematics are either Pure or Mixed. To the Pure Mathematics are those sciences belonging which handle Quantity Determinate, merely severed from any axioms of natural philosophy; and these are two, Geometry and Arithmetic; the one handling Quantity continued, and the other dissevered. Mixed hath for subject some axioms or parts of natural philosophy, and considereth Quantity determined, as it is auxiliary and incident unto them. For many parts of nature can neither be invented with sufficient subtilty nor demonstrated with sufficient perspicuity nor accommodated unto use with sufficient dexterity, without the aid and intervening of the Mathematics: of which sort are Perspective, Music, Astronomy, Cosmography, Architecture, Enginery, and divers others. In the Mathematics I can report no deficience, except it be that men do not sufficiently understand the excellent use of the Pure Mathematics, in that they do remedy and cure many defects in the wit and faculties intellectual. For if the wit be too dull, they sharpen it; if too wandering, they fix it; if too inherent in the sense, they abstract it. So that as tennis is a game of no use in itself, but of great use in respect it maketh a quick eye and a body ready to put itself into all postures; so in the Mathematics, that use which is collateral and intervenient is no less worthy than that which is principal and intended [74]. And as for the Mixed Ma-

[72] De Aug. iii. 6. Observe that in translating this part of the work Bacon has not only made great additions, but changed the order. * [*i.e.* "champain"].

[73] In the *De Augmentis* he concludes by placing it as an appendix and auxiliary to Natural Philosophy, in order to mark more distinctly its proper function; which he complains that the mathematicians are apt to forget, and to exalt it, as the logicians exalt logic, above the sciences which it is its business to serve.

[74] The whole of this passage relating to the use of pure mathematics in the training of the intellect is omitted in the translation; and the omission has been represented as indicating a change in Bacon's opinion either as to the value of this particular study in that respect, or as to the expediency of encouraging any study which is "useful only to the mind" of the student. This conjecture is hardly reconcilable however with the fact that the same recommendation of mathematics as a cure for certain defects of the

thematics, I may only make this prediction, that there cannot fail to be more kinds of them, as nature grows further disclosed. Thus much of Natural Science or the part of Nature Speculative.

¶ [75] For Natural Prudence, or the part Operative of Natural Philosophy, we will divide it into three parts, Experimental, Philosophical, and Magical,[76] which three parts active have a correspondence and analogy with the three parts Speculative Natural History, Physic, and Metaphysic. For many operations have been invented, sometimes by a casual incidence and occurrence, sometimes by a purposed experiment; and of those which have been found by an intentional experiment, some have been found out by varying or extending the same experiment, some by transferring and compounding divers experiments the one into the other, which kind of invention an empiric may manage [77]. Again, by the knowledge of physical causes there cannot fail to follow many indications and designations of new particulars, if men in their speculation will keep one eye upon use and practice. But these are but coastings along the shore, *premendo littus iniquum*; for it seemeth to me there can hardly be discovered any radical or fundamental alterations and innovations in nature, either by the fortune and essays of experiments, or by the light and direction of physical causes. If therefore we have reported Metaphysic deficient, it must follow that we do the like of Natural Magic, which hath relation thereunto. For as for the Natural Magic whereof now there is mention in books, containing certain credulous and superstitious conceits and observations of Sympathies and Antipathies and hidden proprieties, and some frivolous experiments, strange rather by disguisement than in themselves; it is as far differing in truth of nature from such a knowledge as we require, as the story of King Arthur of Britain, or Hugh of Bourdeaux, differs from Cæsar's commentaries in truth of story. For it is manifest that Cæsar did greater things *de vero* than those imaginary heroes were feigned to do. But he did them not in that fabulous manner. Of this kind of learning the fable of Ixion was a figure, who designed to enjoy Juno, the goddess of power; and instead of her had copulation with a cloud, of which mixture were begotten centaurs and chimeras. So whosoever shall entertain high and vaporous imaginations instead of a laborious and sober inquiry of truth, shall beget hopes and beliefs of strange and impossible shapes. And therefore we may note in these sciences which hold so much of imagination and belief, as this degenerate Natural Magic, Alchemy, Astrology, and the like, that in their propositions the description of the means is ever more monstrous than the pretence or end. For it is a thing more probable, that he that knoweth well the natures of Weight, of Colour, of Pliant and Fragile in respect of the hammer, of Volatile and Fixed in respect of the fire, and the rest, may superinduce upon some metal the nature and form of gold by such mechanique as belongeth to the production of the natures afore rehearsed, than that some

Naturalis Magia, sive Physica Operativa Major.

ntellect is repeated both in a later chapter of the *De Augmentis* (vi. 4.; to which place indeed the observation properly belongs), and in the *Essay on Studies* as published in 1625. Nor is there any difficulty in accounting for the omission of it here. When Bacon wrote the *Advancement* in 1605, he had no deficiency to report in the department of Mathematics; he could not name any branch of the study which had not been properly pursued, and merely took the opportunity of observing by the way that the study of the pure mathematics had a collateral and incidental value as an instrument of education: an observation very good and just in itself, but not at all to the purpose of the argument. When he revised the work in 1622 he knew more about mathematics, and was able to point out certain deficiencies which were very much to the purpose,—especially as to the doctrine of Solids in Geometry and of Series in Arithmetic; and in introducing a relevant observation he naturally struck out the irrelevant one. [75] De Aug. iii. 5.

[76] In the translation the name *Natural Prudence* is omitted; the *part operative* is divided into two parts, instead of three; viz. Mechanic and Magic; and the whole exposition is much altered and enlarged.

[77] Being a matter of ingenuity and sagacity, rather than philosophy (*quæ magis ingeniosa res est et sagax, quam philosophica*). This is in fact the *Experientia Literata* of which we hear more further on.

grains of the medicine projected should in a few moments of time turn a sea of quicksilver or other material into gold. So it is more probable, that he that knoweth the nature of arefaction, the nature of assimilation of nourishment to the thing nourished, the manner of increase and clearing of spirits, the manner of the depredations which spirits make upon the humours and solid parts, shall by ambages of diets, bathings, anointings, medicines, motions, and the like, prolong life or restore some degree of youth or vivacity, than that it can be done with the use of a few drops or scruples of a liquor or receit. To conclude therefore, the true Natural Magic, which is that great liberty and latitude of operation which dependeth upon the knowledge of Forms, I may report deficient, as the relative thereof is. To which part, if we be serious and incline not to vanities and plausible discourse, besides the deriving and deducing the operations themselves from Metaphysic, there are pertinent two points of much purpose, the one by way of preparation, the other by way of caution. The first is, that there be made a *Calendar resembling an inventory* [78] of the estate of man, containing all the inventions (being the works or fruits of nature or art) which are now extant and whereof man is already possessed; out of which doth naturally result a note, what things are yet held impossible, or not invented; which calendar will be the more artificial and serviceable, if to every reputed impossibility you add what thing is extant which cometh the neareth in degree to that impossibility; to the end that by these optatives and potentials man's inquiry may be the more awake in deducing direction of works from the speculation of causes. And secondly, that those experiments be not only esteemed which have an immediate and present use, but those principally which are of most universal consequence for invention of other experiments, and those which give most light to the invention of causes; for the invention of the mariner's needle, which giveth the direction, is of no less benefit for navigation than the invention of the sails, which give the motion [79].

Inventarium Opum humanarum.

[80] Thus have I passed through Natural Philosophy, and the deficiences thereof; wherein if I have differed from the ancient and received doctrines, and thereby shall move contradiction; for my part, as I affect not to dissent, so I purpose not to contend. If it be truth,

Non canimus surdis, respondent omnia sylvæ
[All as we sing the listening woods reply]:

the voice of nature will consent, whether the voice of man do or no. And as Alexander Borgia was wont to say of the expedition of the French for Naples, that they came with chalk in their hands to mark up their lodgings, and not with weapons to fight; so I like better that entry of truth which cometh peaceably with chalk to mark up their minds which are capable to lodge and harbour it, than that which cometh with pugnacity and contention.

[81] But there remaineth a division of Natural Philosophy according to the *report of the inquiry*, and nothing concerning the matter or subject; and that is positive and Considerative; when the inquiry reporteth either an Assertion or a Doubt. These doubts or *non liquets* are of two sorts, Particular and Total. For the first, we see a good example thereof in Aristotle's Problems, which deserved to have had a better continuance, but so nevertheless as there is one point whereof warning is to be given and taken. The registering of doubts hath two excellent uses: the one, that it saveth philosophy from errors and falsehoods; when that which

[78] This is the Inventory which (as I think) was to be contained in the tenth chapter of the *Valerius Terminus*. See my note on Mr. Ellis's preface.

[79] This example is omitted in the translation, to make room for a better (with which Bacon was probably not acquainted in 1605)—the artificial congelation of water; an experiment which he especially valued as giving light to the secret process of condensation.

[80] The passage corresponding to this paragraph concludes the third book of the *De Augmentis*. That which follows is transferred to the middle of the fourth chapter.

[81] The substance of this paragraph will be found in the middle of the fourth chapter of the third book of the *De Augmentis.*

is not fully appearing is not collected into assertion, whereby error might draw error, but reserved in doubt: the other, that the entry of doubts are as so many suckers or spunges to draw use [82] of knowledge; insomuch as that which if doubts had not preceded a man should never have advised but passed it over without note, by the suggestion and solicitation of doubts is made to be attended and applied. But both these commodities do scarcely countervail an inconvenience which will intrude itself, if it be not debarred; which is, that when a doubt is once received men labour rather how to keep it a doubt still than how to solve it, and accordingly bend their wits [83]. Of this we see the familiar example in lawyers and scholars, both which if they have once admitted a doubt, it goeth ever after authorized for a doubt. But that use of wit and knowledge is to be allowed which laboureth to make doubtful things certain, and not those which labour to make certain things doubtful. Therefore these *calendars of doubts* I commend as excellent things, so that there be this caution used, that when they be throughly sifted and brought to resolution, they be from thenceforth omitted, decarded,* and not continued to cherish and encourage men in doubting. To which calendar of doubts or problems I advise be annexed another calendar, as much or more material, which is a calendar of popular error: I mean chiefly in natural history,[84] such as pass in speech and conceit, and are nevertheless apparently detected and convicted of untruth; that man's knowledge be not weakened nor imbased by such dross and vanity. As for the *doubts or non liquets general or total*, I understand those differences of opinions touching the principles of nature and the fundamental points of the same, which have caused the diversity of sects, schools, and philosophies; as that of Empedocles, Pythagoras, Democritus, Parmenides, and the rest [85]. For although Aristotle, as though he had been of the race of the Ottomans, thought he could not reign except the first thing he did he killed all his brethren; yet to those that seek truth and not magistrality, it cannot but seem a matter of great profit to see before them the several opinions touching the foundations of nature; not for any exact truth that can be expected in those theories; for as the same phænomena in astronomy are satisfied by the received astronomy of the diurnal motion and the proper motions of the planets with their eccentrics and epicycles, and likewise by the theory of Copernicus who supposed the earth to move; and the calculations are indifferently agreeable to both; so the ordinary face and view of experience is many times satisfied by several theories and philosophies; whereas to find the real truth requireth another manner of severity and attention. For as Aristotle saith that children at the first will call every woman mother, but afterwards they come to distinguish according to truth; so experience, if it be in childhood, will call every philosophy mother, but when it cometh to ripeness it will discern the true mother. So as in the mean time it is good to see the several glosses and opinions upon nature, whereof it may be every one in some one point hath seen clearer than his fellows. Therefore I wish some collection to be made painfully and understandingly *de antiquis philosophiis*, out of all the possible light which remaineth to us of them [86]. Which kind of work I find deficient. But here I must give warning, that it be done distinctly and severely [87]; the philosophies of every one throughout by themselves; and not by titles packed and faggoted up together, as hath been done by Plutarch. For it is the harmony

Continuatio Problematum in Natura.

Catalogus Falsitatum grassantium in historia Naturæ.

De Antiquis Philosophiis.

[82] *i.e.* increase. (*quæ incrementa scientiæ perpetuo ad se sugant et alliciant*).

[83] This is explained in the translation by adding that the recognition of the doubt has the effect of raising champions to maintain each side, and so keeping it up.

* [*i.e.* discarded]. [84] *vel in Historia Naturali*, vel in Dogmatibus.—*De Aug.*

[85] In the translation *Empedocles* is omitted; and *Philolaus, Xenophanes, Anaxagoras, Leucippus*, added.

[86] Such (according to the translation) as the Lives of the ancient Philosophers, Plutarch's collection of placita, Plato's quotations, Aristotle's confutations, and the scattered notices in Lactantius, Philo, Philostratus, &c.

[87] So both in the original and in ed. 1633; perhaps a misprint for "severally." Ed. 1629 has *severedly*. The translation has *distinctè* only.

of a philosophy in itself which giveth it light and credence; whereas if it be singled and broken, it will seem more foreign and dissonant. For as when I read in Tacitus the actions of Nero or Claudius, with circumstances of times, inducements, and occasions, I find them not so strange; but when I read them in Suetonius Tranquillus gathered into titles and bundles, and not in order of time, they seem more monstrous and incredible; so is it of any philosophy reported entire, and dismembered by articles. Neither do I exclude opinions of latter times to be likewise represented in this calendar of sects of philosophy, as that of Theophrastus Paracelsus, eloquently reduced into an harmony by the pen of Severinus the Dane; and that of Telesius, and his scholar Donius, being as a pastoral philosophy, full of sense but of no great depth; and that of Fracastorius, who though he pretended not to make any new philosophy, yet did use the absoluteness of his own sense upon the old; and that of Gilbertus our countryman, who revived, with some alterations and demonstrations, the opinions of Xenophanes [88]; and any other worthy to be admitted.

Thus have we now dealt with two of the three beams of man's knowledge; that is *Radius Directus*, which is referred to nature, *Radius Refractus*, which is referred to God, and cannot report truly because of the inequality of the medium. There resteth *Radius Reflexus* whereby Man beholdeth and contemplateth himself.

¶ [89] We come therefore now to that knowledge whereunto the ancient oracle directeth us, which is the *knowledge of ourselves;* which deserveth the more accurate handling, by how much it toucheth us more nearly. This knowledge, as it is the end and term of natural philosophy in the intention of man, so notwithstanding it is but a portion of natural philosophy in the continent of nature. And generally let this be a rule, that all partitions of knowledges be accepted rather for lines and veins, than for sections and separations; and that the continuance and entireness of knowledge be preserved. For the contrary hereof hath made particular sciences to become barren, shallow, and erroneous; while they have not been nourished and maintained from the common fountain. So we see Cicero the orator complained of Socrates and his school, that he was the first that separated philosophy and rhetoric; whereupon rhetoric became an empty and verbal art. So we may see that the opinion of Copernicus touching the rotation of the earth [90], which astronomy itself cannot correct because it is not repugnant to any of the phænomena, yet natural philosophy may correct. So we see also that the science of medicine, if it be destituted and forsaken by natural philosophy, it is not much better than an empirical practice. With this reservation therefore we proceed to Human Philosophy or Humanity, which hath two parts: the one considereth man segregate, or distributively; the other congregate, or in society. So as Human Philosophy is either Simple and Particular, or Conjugate and Civil. Humanity Particular consisteth of the same parts whereof man consisteth; that is, of knowledges which respect the Body, and of knowledges that respect the Mind. But before we distribute so far, it is good to constitute. For I do take the consideration in general and at large of Human Nature to be fit to be emancipate and made a knowledge by itself; not so much in regard of those delightful and elegant discourses which have been made of the dignity of man [91], of

[88] This passage is considerably altered in the translation, and the differences are worth noticing as bearing upon the course of Bacon's reading and the development of his views in the interval. After the notice of Paracelsus the translation proceeds "or of Telesius of Consentium, *who revived the philosophy of Parmenides and so turned the arms of the Peripatetics against themselves*; or of *Patricius the Venetian, who sublimated the fumes of the Platonists;* or of our countryman Gilbert, who set up again the *doctrines of Philolaus*". The names of *Donius, Fracastorius,* and *Xenophanes* are entirely omitted. I do not know whether Mr. Ellis's attention had been directed to these changes.

[89] De Aug. iv. 1. The whole of this chapter is much altered and enlarged; re-written rather than translated.

[90] The translation adds, *quæ nunc quoque invaluit.*

[91] In the *De Augmentis* this part is numbered among the Desiderata. The *miseries* of man, he says, have been well set forth both by philosophers and theologians; but

his miseries, of his state and life, and the like *adjuncts of his common and undivided nature*; but chiefly in regard of the knowledge concerning the *sympathies and concordances between the mind and body*, which, being mixed, cannot be properly assigned to the sciences of either.

This knowledge hath two branches: for as all leagues and amities consist of mutual Intelligence and mutual Offices, so this league of mind and body hath these two parts; *how the one discloseth the other*, and *how the one worketh upon the other*; Discovery, and Impression. The former of these hath begotten two arts, both of Prediction or Prenotion; whereof the one is honoured with the inquiry of Aristotle, and the other of Hippocrates. And although they have of later time been used to be coupled with superstitious and fantastical arts, yet being purged and restored to their true state, they have both of them a solid ground in nature, and a profitable use in life. The first is Physiognomy, which discovereth the disposition of the mind by the lineaments of the body. The second is the Exposition of Natural Dreams, which discovereth the state of the body by the imaginations of the mind. In the former of these I note a deficience.[92] For Aristotle hath very ingeniously and diligently handled the factures of the body, but not the gestures of the body, which are no less comprehensible by art, and of greater use and advantage. For the Lineaments of the body do disclose the disposition and inclination of the mind in general; but the Motions of the countenance and parts do not only so, but do further disclose the present humour and state of the mind and will. For as your Majesty saith most aptly and elegantly, *As the tongue speaketh to the ear, so the gesture speaketh to the eye*. And therefore a number of subtile persons, whose eyes do dwell upon the faces and fashions of men, do well know the advantage of this observation, as being most part of their ability; neither can it be denied but that it is a great discovery of dissimulations, and a great direction in business.

The latter branch, touching Impression, hath not been collected into art, but hath been handled dispersedly; and it hath the same relation or antistrophe that the former hath. For the consideration is double: Either *how and how far the humours and affects*[93] *of the body do alter or work upon the mind*; or again, *how and how far the passions or apprehensions of the mind do alter or work upon the body*. The former of these hath been inquired and considered as a part and appendix of Medicine, but much more as a part of Religion or Superstition. For the physician prescribeth cures of the mind in phrensies and melancholy passions; and pretendeth also to exhibit medicines to exhilarate the mind, to confirm the courage, to clarify the wits, to corroborate the memory, and the like; but the scruples and superstitions of diet and other regiment of the body in the sect of the Pythagoreans, in the heresy of the Manicheans, and in the law of Mahomet, do exceed. So likewise the ordinances in the Ceremonial Law, interdicting the eating of the blood and the fat, distinguishing between beasts clean and unclean for meat, are many and strict. Nay the faith itself, being clear and serene from all clouds of Ceremony, yet retaineth the use of fastings, abstinences, and other macerations and humiliations of the body, as things real, and not figurative.[94] The root and life of all which prescripts is, (besides the ceremony[95]), the consideration of the dependency which the affections of the mind are submitted unto upon the state and disposition of the body, And if any

of what he calls the *triumphs* of man, (that is, instances of the highest perfection which human faculties, mental or bodily, have exhibited), he wishes a collection to be made from history; and gives a page or two of anecdotes by way of example.

[92] With regard to the latter, of which nothing more is said here, he observes in the *De Augmentis* that the treatment it has received is full of follies, and not grounded upon the most solid basis,—which is that when the same sensation is produced in the sleeper by an internal cause which is usually the effect of some external act, he will dream of that act; as in the case of nightmare, where the sensation of oppression on the stomach created by the fumes of indigestion makes a man dream that his body is oppressed by a weight superimposed.

[93] *temperamentum*.—De Aug.

[94] *tanquam rerum non mere ritualium sed etiam fructuosarum*.—De Aug.

[95] The translation adds, "and the exercise of obedience".

man of weak judgment do conceive that this suffering of the mind from the body doth either question the immortality or derogate from the sovereignty of the soul, he may be taught in easy instances, that the infant in the mother's womb is compatible with the mother [96] and yet separable; and the most absolute monarch is sometimes led by his servants and yet without subjection. As for the reciprocal knowledge, which is the operation of the conceits and passions of the mind upon the body, we see all wise physicians in the prescriptions of their regiments to their patients do ever consider *accidentia animi*, as of great force to further or hinder remedies or recoveries; and more specially it is an inquiry of great depth and worth concerning Imagination, how and how far it altereth the body proper of the imaginant. For although it hath a manifest power to hurt, it followeth not it hath the same degree of power to help; no more than a man can conclude, that because there be pestilent airs, able suddenly to kill a man in health, therefore there should be sovereign airs, able suddenly to cure a man in sickness. But the inquisition of this part is of great use, though it needeth, as Socrates said, *a Delian diver*, being difficult and profound. But unto all this knowledge *de communi vinculo*, of the concordances between the mind and the body, that part of inquiry is most necessary, which considereth of the *seats* and *domiciles* which the several faculties of the mind do take and occupate in the organs of the body; which knowledge hath been attempted, and is controverted, and deserveth to be much better enquired. For the opinion of Plato, who placed *the understanding in the brain*, *animosity* (which he did unfitly call *anger*, having a greater mixture with *pride*) *in the heart*, and *concupiscence or sensuality in the liver*, deserveth not to be despised; but much less to be allowed [97]. So then we have constituted (as in our own wish and advice) the inquiry *touching human nature entire*, as a just portion of knowledge to be handled apart.

¶ [98] The knowledge that concerneth man's body is divided as the good of man's body is divided, unto which it referreth. The good of man's body is of four kinds, Health, Beauty, Strength, and Pleasure: so the knowledges are Medicine, or art of Cure; art of Decoration, which is called Cosmetic; art of Activity, which is called Athletic; and art Voluptuary, which Tacitus truly calleth *eruditus luxus*, [educated luxury]. This subject of man's body is of all other things in nature most susceptible of remedy, but then that remedy is most susceptible of error. For the same subtility of the subject doth cause large possibility and easy failing; and therefore the inquiry ought to be more exact.

To speak therefore of Medicine, and to resume that we have said, ascending a little higher: The ancient opinion that man was Microcosmus, an abstract or model of the world, hath been fantastically strained by Paracelsus and the alchemists, as if there were to be found in man's body certain correspondences and parallels, which should have respect to all varieties of things, as stars, planets, minerals, which are extant in the great world. But thus much is evidently true, that of all substances which nature hath produced, man's body is the most extremely compounded. For we see herbs and plants are nourished by earth and water; beasts for the most part by herbs and fruits; man by the flesh of beasts, birds, fishes, herbs, grains, fruits, water, and the manifold alterations, dressings, and preparations of these several bodies, before they come to be his food and aliment. Add hereunto that beasts have a more simple order of life, and less change of affections to work upon their bodies; whereas man in his mansion, sleep, exercise, passions, hath infinite variations; and it cannot be denied but that the Body of man of all other things is of the most compounded mass. The Soul on the other side is the simplest of substances, as is well expressed,

[96] *i.e.* suffers together with the mother: *simul cum matribus affectibus compatitur.*

[97] Neither (he adds in the translation) is that other arrangement free from error, which places the several intellectual faculties, Imagination, Reason, and Memory, in the several ventricles of the brain.

[98] De Aug. iv. 2.

Purumque reliquit
Æthereum sensum atque auraï simplicis ignem:
[Pure and unmixed
The ethereal sense is left—mere air and fire].

So that it is no marvel that the soul so placed enjoys no rest, if that principle be true that *Motus rerum est rapidus extra locum, placidus in loco* [things move rapidly to their place and calmly in their place]. But to the purpose. This variable composition of man's body hath made it as an instrument easy to distemper; and therefore the poets did well to conjoin Music and Medicine in Apollo: because the office of medicine is but to tune this curious harp of man's body and to reduce it to harmony. So then the subject being so variable hath made the art by consequent more conjectural; and the art being conjectural hath made so much the more place to be left for imposture. For almost all other arts and sciences are[99] judged by acts or masterpieces[100] as I may term them, and not by the successes and events. The lawyer is judged by the virtue of his pleading, and not by the issue of the cause. The master in the ship is judged by the directing his course aright, and not by the fortune of the voyage. But the physician, and perhaps the politique, hath no particular acts demonstrative of his ability, but is judged most by the event; which is ever but as it is taken: for who can tell, if a patient die or recover, or if a state be preserved or ruined, whether it be art or accident? And therefore many times the impostor is prized, and the man of virtue taxed. Nay, we see [the[101]] weakness and credulity of men is such, as they will often prefer a montabank[102] or witch before a learned physician. And therefore the poets were clear-sighted in discerning this extreme folly, when they made Æsculapius and Circe brother and sister, both children of the sun, as in the verses,

Ipse repertorem medicinæ talis et artis
Fulmine *Phœbigenam* Stygias detrusit ad undas
[*Apollo's son* from whom that art did grow
Jove struck with thunder to the shades below].

And again,

Dives inaccessos ubi *Solis filia* lucos etc.
[Now by the shelves of Circe's coast they run,—
Circe the rich, the *daughter of the sun*[103]].

For in all times, in the opinion of the multitude, witches and old women and impostors have had a competition with physicians. And what followeth? Even this, that physicians say to themselves, as Salomon expresseth it upon an higher occasion; *If it befal to me as befalleth to the fools, why should I labour to be more wise?* And therefore I cannot much blame physicians, that they use commonly to intend some other art or practice, which they fancy, more than their profession. For you shall have of them antiquaries, poets, humanists, statesmen, merchants, divines, and in every of these better seen than in their profession; and no doubt upon this ground, that they find that mediocrity and excellency in their art maketh no difference in profit or reputation towards their fortune; for the weakness of patients and sweetness of life and nature of hope[104] maketh men depend upon physicians with all their defects. But nevertheless these things which we have spoken of are courses begotten between a little occasion and a great deal of sloth and default; for if we will excite and awake our observation, we shall see in familiar instances what a predominant faculty the *subtilty of spirit*[105] hath over the *variety of matter or form*. Nothing more variable than faces

[99] So edd. 1629 and 1633. The original omits *are*.
[100] *virtute sua et functione*.—De Aug.
[101] *the* omitted both in the original and in edd. 1629 and 1633.
[102] This is the spelling of the old editions; and ought apparently to be revived by those who believe that our orthography is the guardian of our etymologies.
[103] Dryden. [104] The translation adds *et amicorum commendatio*.
[105] *i.e.* of the understanding: *intellectus subtilitas et acumen*.

and countenances; yet men can bear in memory the infinite distinctions of them; nay, a painter with a few shells of colours, and the benefit of his eye and habit of his imagination, can imitate them all that ever have been, are, or may be, if they were brought before him. Nothing more variable than voices; yet men can likewise discern them personally; nay, you shall have a *buffon* or *pantomimus* will express as many as he pleaseth. Nothing more variable than the differing sounds of words; yet men have found the way to reduce them to a few simple letters. So that it is not *the insufficiency or incapacity of man's mind*, but it is *the remote standing or placing thereof*, that breedeth these mazes and incomprehensions: for as the sense afar off is full of mistaking but is exact at hand, so is it of the understanding; the remedy whereof is not to quicken or strengthen the organ, but to go nearer to the object; and therefore there is no doubt but if the physicians will learn and use the true approaches and avenues of nature, they may assume as much as the poet saith:

> Et quoniam variant morbi, variabimus artes;
> Mille mali species, mille salutis erunt

[varying their arts according to the variety of diseases,—for a thousand forms of sickness a thousand methods of cure]. Which that they should do, the nobleness of their art doth deserve; well shadowed by the poets, in that they made Æsculapius to be the son of the Sun, the one being the fountain of life, the other as the second stream; but infinitely more honoured by the example of our Saviour, who made the body of man the object of his miracles, as the soul was the object of his doctrine. For we read not that ever he vouchsafed to do any miracle about honour, or money (except that one for giving tribute to Cæsar), but only about the preserving, sustaining, and healing the body of man.

Medicine is a science which hath been (as we have said) more professed than laboured, and yet more laboured than advanced: the labour having been, in my judgment, rather in circle than in progression. For I find much iteration, but small addition. It considereth *causes of diseases*, with the *occasions or impulsions*; the *diseases themselves*, with the *accidents*; and the *cures*, with the *preservations*[106]. The deficiencies which I think good to note being a few of many, and those such as are of a more open and manifest nature, I will enumerate, and not place.

The first is the discontinuance of the ancient and serious diligence of Hippocrates, which used to set down a narrative of the special cases of his patients, and how they proceeded, and how they were judged by recovery or death. Therefore having an example proper in the father of the art, I shall not need to allege an example foreign, of the wisdom of the lawyers, who are careful to report new cases and decisions for the direction of future judgments. This continuance of Medicinal History I find deficient; which I understand neither to be so infinite as to extend to every common case, nor so reserved as to admit none but wonders: for many things are new in the manner, which are not new in the kind; and if men will intend to observe, they shall find much worthy to observe.

Narrationes medicinales.

In the inquiry which is made by Anatomy I find much deficience: for they inquire of the *parts*, and their *substances, figures*, and *collocations*; but they inquire not of the *diversities of the parts*[107], the *secrecies of the passages*, and the *seats or nestling of the humours*, nor much of

Anatomia comparata.

[106] Here the translation departs widely from the original. The parts, or offices, into which Medicine is divided in the *De Augmentis* are: 1. the preservation of health; 2. the cure of diseases; 3. the prolongation of life; with regard to the first of which Bacon complains that physicians have treated it in several respects unskilfully or imperfectly; and with regard to the last that they have not recognized the prolongation of natural life as a principal part of their science, being satisfied if they can prevent it from being shortened by diseases. Under the second he includes the whole doctrine of diseases,—the causes, the symptoms, and the remedies, all in fact that is here included under the general head of Medicine,—and so strikes again into the text.

[107] *i.e.* they inquire of the parts, etc., of the human body in general, but not of the

the *footsteps and impressions of diseases*: the reason of which omission I suppose to be, because the first inquiry may be satisfied in the view of one or a few anatomies; but the latter, being comparative and casual, must arise from the view of many. And as to the diversity of parts, there is no doubt but the facture or framing of the inward parts is as full of difference as the outward, and in that is the *cause continent* of many diseases; which not being observed, they quarrel many times with the humours, which are not in fault; the fault being in the very frame and mechanic of the part, which cannot be removed by medicine alterative, but must be accommodate and palliate by diets and medicines familiar. And for the passages and pores, it is true which was anciently noted that the more subtile of them appear not in anatomies, because they are shut and latent in dead bodies, though they be open and manifest in live: which being supposed, though the inhumanity of *anatomia vivorum* [anatomy of the living subject] was by Celsus justly reproved; yet in regard of the [108] great use of this observation, the inquiry needed not by him so slightly to have been relinquished altogether, or referred to the casual practices of surgery; but might have been well diverted upon the dissection of beasts alive, which notwithstanding the dissimilitude of their parts, may sufficiently satisfy this inquiry. And for the humours, they are commonly passed over in anatomies as purgaments; whereas it is most necessary to observe what cavities, nests, and receptacles the humours do find in the parts, with the differing kind of the humour so lodged and received. And as for the footsteps of diseases, and their devastations of the inward parts, imposthumations, exulcerations, discontinuations, putrefactions, comsumptions, contractions, extensions, convulsions, dislocations, obstructions, repletions, together with all preternatural substances, as stones, carnosities, excrescences, worms, and the like; they ought to have been exactly observed by multitude of anatomies and the contribution of men's several experiences, and carefully set down both historically according to the appearances, and artificially with a reference to the diseases and symptoms which resulted from them, in case where the anatomy is of a defunct patient; whereas now upon opening of bodies they are passed over slightly and in silence.

Inquisitio ulterior de Morbis insanabilibus.

In the inquiry of diseases, they do abandon the cures of many, some as in their nature incurable, and others as past the period of cure; so that Sylla and the triumvirs never proscribed so many men to die, as they do by their ignorant edicts; whereof [109] numbers do escape with less difficulty than they did in the Roman proscriptions. Therefore I will not doubt to note as a deficience, that they inquire not the perfect cures of many diseases, or extremities of diseases, but pronouncing them incurable do enact a law of neglect, and exempt ignorance from discredit.

De Euthanasia exteriore.

Nay further, I esteem it the office of a physician not only to restore health, but to mitigate pain and dolors; and not only when such mitigation may conduce to recovery, but when it may serve to make a fair and easy passage: for it is no small felicity which Augustus Cæsar was wont to wish to himself, that same *Euthanasia*; and which was specially noted in the death of Antoninus Pius, whose death was after the fashion and semblance of a kindly and pleasant sleep. So it is written of Epicurus, that after his disease was judged desperate, he drowned his stomach and senses with a large draught and ingurgitation of wine; whereupon the epigram was made, *Hinc stygias ebrius hausit aquas*; he was not sober enough to taste any bitterness of the Stygian water. But the physicians contrariwise do make a kind of scruple and religion to stay with the patient after the disease is deplored; whereas, in my judgment, they ought both to enquire the skill and to give the attendances for the facilitating and assuaging of the pains and agonies of death.

In the consideration of the Cures of diseases, I find a deficience in the receipts of

diversities of the parts in different bodies,—of simple, but not of comparative, anatomy. This whole paragraph is much enlarged in the translation, and the order changed.

[108] So edd. 1629 and 1633. The original omits *the*.

[109] *i.e.* of whom nevertheless: *quorum tamen plurimi etc.*—De Aug.

Medicinæ Experimentales.

propriety respecting the particular cures of diseases[110]: for the physicians have frustrated the fruit of tradition and experience by their magistralities in adding and taking out and changing *quid pro quo* in their receipts, at their pleasures; commanding so over the medicine as the medicine cannot command over the disease. For except it be treacle and mithridatum, and of late *diascordium*[111], and a few more, they tie themselves to no receipts severely and religiously: for as to the confections of sale which are in the shops they are for readiness and not for propriety; for they are upon general intentions of purgings, opening, comforting, altering, and not much appropriate to particular diseases: and this is the cause why empirics and old women are more happy many times in their cures than learned physicians, because they are more religious in holding their medicines. Therefore here is the deficience which I find, that physicians have not, partly out of their own practice, partly out of the constant probations reported in books, and partly out of the traditions of empirics, set down and delivered over certain *experimental medicines* for the cure of particular diseases, besides their own *conjectural* and *magistral descriptions*. For as they were the men of the best composition in the state of Rome, which either being consuls inclined to the people, or being tribunes inclined to the senate; so in the matter we now handle, they be the best physicians, which being learned incline to the traditions of experience, or being empirics incline to the methods of learning.

Imitatio Naturæ in Balneis et Aquis Medicinalibus.

In preparation of Medicines, I do find strange, specially considering how mineral medicines have been extolled, and that they are safer for the outward than inward parts, that no man hath sought to make an imitation by art of Natural Baths and Medicinal Fountains, which nevertheless are confessed to receive their virtues from minerals: and not so only, but discerned and distinguished from what particular mineral they receive tincture, as sulphur, vitriol, steel, or the like; which nature if it may be reduced to compositions of art, both the variety of them will be increased, and the temper of them will be more commanded[112].

Filium Medicinale, sive de vicibus Medicinarum.

But lest I grow to be more particular than is agreeable either to my intention or to proportion, I will conclude this part with the note of one deficience more, which seemeth to me of greatest consequence; which is, that the prescripts in use are too compendious to attain their end: for to my understanding, it is a vain and flattering opinion to think any medicine can be so sovereign or so happy, as that the receipt or use of it can work any great effect upon the body of man. It were a strange speech which spoken, or spoken oft, should reclaim a man from a vice to which he were by nature subject. It is order, pursuit, sequence, and interchange of application, which is mighty in nature; which although it require more exact knowledge in prescribing and more precise obedience in observing, yet is recompensed with the magnitude of effects. And although a man would think, by the daily visitations of the physicians, that there were a pursuance in the cure; yet let a man look into their prescripts and ministrations, and he shall find them but inconstancies and every day's devices, without any settled providence or project. Not that every scrupulous or superstitious prescript is effectual, no more than every straight way is the way to heaven; but the *truth of the direction* must precede *severity of observance*[113].

[110] *i.e.* the particular medicines proper for particular diseases, as distinguished from "general intentions".

[111] In the translation he adds "the confection of Alkermes".

[112] So edd. 1629 and 1633. The original has *commended*.

[113] The latter part of this paragraph is considerably enlarged in the translation, rather however by way of explanation than addition, till he comes to the end; when in closing his account of the *Desiderata* in the science of curing diseases, he adds that there is however one other remaining which is of more consequence than all the rest—namely that of a true and active Natural Philosophy for the Science of Medicine to be built upon.

Between this paragraph and the next is interposed a long passage upon the prolongation of life of which there are no traces at all here.

For Cosmetic, it hath parts civil, and parts effeminate: for cleanness of body was ever esteemed to proceed from a due reverence to God, to society, and to ourselves [114]. As for artificial decoration, it is well worthy of the deficiencies which it hath; being neither fine enough to deceive, nor handsome to use, nor wholesome to please [115].

For Athletic, I take the subject of it largely; that is to say, for any point of ability whereunto the body of man may be brought, whether it be of *activity* or of *patience*; whereof activity hath two parts, *strength* and *swiftness*; and patience likewise hath two parts, *hardness against wants and extremities*, and *indurance of pain or torment*. Whereof we see the practices in tumblers, in savages [116], and in those that suffer punishment: nay, if there be any other faculty which falls not within any of the former divisions, as in those that dive, that obtain a strange power of containing respiration, and the like, I refer it to this part. Of these things the practices are known, but the philosophy that concerneth them is not much enquired; the rather, I think, because they are supposed to be obtained either by an aptness of nature, which cannot be taught, or only by continual custom, which is soon prescribed; which though it be not true, yet I forbear to note any deficiencies; for the Olympian Games are down long since, and the mediocrity of these things is for use; as for the excellency of them, it serveth for the most part but for mercenary ostentation.

For Arts of Pleasure Sensual, the chief deficience in them is of laws to repress them [117]. For as it hath been well observed that the arts which flourish in times while virtue is in growth, are military; and while virtue is in state, are liberal; and while virtue is in declination, are voluptuary; so I doubt that this age of the world is somewhat upon the descent of the wheel. With arts *voluptuary* I couple practices *joculary*; for the deceiving of the sense is one of the pleasures of the senses. As for games of recreation, I hold them to belong to civil life and education [118]. And thus much of that particular Human Philosophy which concerns the Body, which is but the tabernacle of the mind.

[114] To whom (he adds in the translation) we owe no less reverence—nay even more—than to others. So in the *New Atlantis*, "and they say (*i.e.* the people of Bensalem) that the reverence of a man's self is, next to Religion, the chiefest bridle of all vices".

[115] So all the editions. He must have meant to write, "handsome to please, nor wholesome to use".

By artificial decoration he means painting the face, as we learn from the translation; where he expresses wonder that this *prava consuetudo fucandi* is not prohibited by the laws, along with sumptuous apparel and lovelocks.

[116] The translation adds "in the stupendous strength shown by maniacs."

[117] Here we have an important addition in the translation. Whether when he wrote the *Advancement of Learning* Bacon had forgotten Painting and Music or meant to find another place for them, I cannot say; but in the *De Augmentis* he includes them among the *Artes Voluptariæ*; which he cannot have intended to do when he wrote this sentence. The passage in which they are introduced is to this effect:—The arts of pleasure, he says, are as many as the senses themselves are. To the eye belongs Painting, with innumerable other arts of magnificence in matter of Buildings, Gardens, Dresses, Vases; Gems, etc.; to the ear Music, with its various apparatus of voices, wind, and strings; and of all the sensual arts those which relate to Sight and Hearing are accounted the most liberal; for as these two senses are the purest and most chaste, so the sciences which belong to them are the most learned; both being waited upon by the Mathematics, and one having some relation to memory and demonstrations, the other to manners and affections of the mind. The rest of the sensual pleasures, with the arts appertaining to them, are held in less honour, as being nearer akin to luxury and magnificence. Unguents, perfumes, delicacies of the table, and especially stimulants of lust, stand more in need of a censor to repress than a master to teach them; and as it has been well observed, etc.

[118] This observation is omitted in the translation; and a new paragraph is introduced stating that everything that relates to the body of man (though there be some which do not properly belong to either of the three offices above mentioned, viz., the preservation of health, the cure of diseases, and the prolongation of life) is to be considered as included in Medicine.

¶ [119] For Human Knowledge which concerns the Mind, it hath two parts; the one that inquireth of *the substance or nature of the soul or mind*, the other that inquireth of *the faculties or functions thereof*. Unto the first of these, the considerations of *the original of the soul*, whether it be *native or adventive*, and *how far it is exempted from laws of matter*, and of the *immortality thereof*, and many other points, do appertain: which have been not more laboriously inquired than variously reported; so as the travail therein taken seemeth to have been rather in a maze than in a way. But although I am of opinion that this knowledge may be more really and soundly inquired, even in nature, than it hath been; yet I hold that in the end it must be bounded by religion, or else it will be subject to deceit and delusion; for as the substance of the soul in the creation was not extracted out of the mass of heaven and earth by the benediction of a *producat*, but was immediately inspired from God; so it is not possible that it should be (otherwise than by accident) subject to *the laws of heaven and earth*, which are *the subject of philosophy*; and therefore the true knowledge of the nature and state of the soul must come by the same inspiration that gave the substance [120]. Unto this part of knowledge touching the soul there be two appendices; which, as they have been handled, have rather vapoured forth fables than kindled truth; Divination and Fascination.

Divination hath been anciently and fitly divided into *artificial* and *natural*; whereof *artificial* is when the mind maketh a prediction by argument, concluding upon signs and tokens; *natural* is when the mind hath a presentation by an internal power, without the inducement of a sign. Artificial is of two sorts; either when the argument is coupled with a derivation of causes, which is *rational*; or when it is only grounded upon a coincidence of the effect, which is *experimental*: whereof the later for the most part is superstitious; such as were the heathen observations upon the inspection of sacrifices, the flights of birds, the swarming of bees; and such as was the Chaldean Astrology, and the like. For *artificial divination*, the several kinds thereof are distributed amongst particular knowledges. The Astronomer hath his predictions, as of conjunctions, aspects, eclipses, and the like. The Physician hath his predictions, of death, of recovery, of the accidents and issues of diseases. The Politique hath his predictions; *O urbem venalem, et cito perituram, si emptorem invenerit!* [a city in which all things are for sale and which will fall to the first purchaser], which stayed not long to be performed, in Sylla first, and after in Cæsar. So as these predictions are now impertinent, and to be referred over. But the divination which springeth from the internal nature of the soul, is that which we now speak of; which hath been made to be of two sorts, *primitive* and by *influxion*. Primitive is grounded upon the supposition that the mind, when it is withdrawn and collected into itself and not diffused into the organs of the body, hath some extent and latitude of prenotion; which therefore appeareth most in sleep, in extasies, and near death; and more rarely in waking apprehensions; and is induced and furthered by those abstinences and observances which make the mind most to consist in itself. By influxion is grounded upon the conceit that the mind, as a mirror or glass, should take illumination from the foreknowledge of God and spirits; unto which the same regiment doth likewise conduce. For the retiring of the mind within itself is the state which is most susceptible of divine influxions; save that it is accompanied in this case with a fervency and

[119] De Aug. iv. 3.

[120] In the translation a new division is introduced which does not appear to be distinctly recognized here—the human soul being divided into Rational and Irrational; the one divine and peculiar to humanity, the other (which is merely its instrument) being of the earth and common to man and brute; and the remark in the text is confined to the first of these only. The other soul, which he calls the *anima sensibilis sive producta*, is represented as a fit subject of physical enquiry, in its nature and substance as well as in its faculties; though the enquiry has not been well pursued with regard to either. Concerning the doctrine of the Duality of the Soul see Mr. Ellis's General Introduction, § 14.

elevation (which the ancients noted by *fury*), and not with a repose and quiet as it is in the other.

Fascination is the power and act of imagination, intensive upon other bodies than the body of the imaginant: for of that we spake in the proper place: wherein the school of Paracelsus and the disciples of pretended Natural Magic have been so intemperate, as they have exalted the power of the imagination to be much one with the power of miracle-working faith; others that draw nearer to probability, calling to their view the secret passages of things, and especially of the contagion that passeth from the body [121], do conceive it should likewise be agreeable to nature that there should be some transmissions and operations from spirit to spirit, without the mediation of the senses; whence the conceits have grown (now almost made civil) of the Mastering Spirit, and the force of confidence, and the like. Incident unto this is the inquiry how to raise and fortify the imagination; for if the imagination fortified have power, then it is material to know how to fortify and exalt it. And herein comes in crookedly and dangerously a palliation of a great part of Ceremonial Magic. For it may be pretended that Ceremonies, Characters, and Charms, do work not by a tacit or sacramental contract with evil spirits, but serve only to strengthen the imagination of him that useth it; as images are said by the Roman church [122] to fix the cogitations and raise the devotions of them that pray before them. But for mine own judgment, if it be admitted that imagination hath power, and that Ceremonies fortify imagination, and that they be used sincerely and intentionally for that purpose [123]; yet I should hold them unlawful, as opposing to that first edict which God gave unto man, *In sudore vultus comedes panem tuum* [in the sweat of thy brow shalt thou eat thy bread]. For they propound those noble effects which God hath set forth unto man to be bought at the price of labour, to be attained by a few easy and slothful observances. Deficiences in these knowledges I will report none, other than the general deficience, that it is not known how much of them is verity and how much vanity [124].

¶ [125] The knowledge which respecteth the Faculties of the Mind of man is of two kinds; the one respecting his Understanding and Reason, and the other his Will, Appetite, and Affection; whereof the former produceth Position or Decree, the latter Action or Execution. It is true that the Imagination is an agent or *nuncius* in both provinces, both the judicial and the ministerial. For Sense sendeth over to Imagination before Reason have judged: and Reason sendeth over to Imagination before the Decree can be acted; for Imagination ever precedeth Voluntary Motion: saving that this Janus of Imagination hath differing faces; for the face towards Reason hath the print of Truth, but the face towards Action hath the print of Good; which nevertheless are faces

Quales decet esse sororum,

[sister-faces]. Neither is the Imagination simply and only a messenger; but is invested with or at leastwise usurpeth no small authority in itself, besides the duty of the message. For it was well said by Aristotle, *That the mind hath over the body that commandment, which the lord hath over a bondman; but that reason hath over the imagination that commandment which a magistrate hath over a free citizen;* who may come also to rule in his turn. For we see that in matters of Faith and Religion we raise our Imagination above our Reason [126]; which is

[121] In the translation he adds "the irradiations of the senses, and the conveyance of magnetic virtues".

[122] In the translation, the words "said by the Roman church" are omitted, and *in Religione usus imaginum . . . . invaluit* are substituted. See note p. 50.

[123] *i.e.* as a physical remedy, without any thought of inviting thereby the assistance of spirits,—as explained in the translation.

[124] This sentence is omitted in the translation altogether; and the chapter concludes with a notice at considerable length of two *Desiderata* not mentioned here; the doctrine of Voluntary Motion, and the doctrine of Sense and the Sensible.

[125] De Aug. v. 1.

[126] Not (he adds in the translation), that the divine illumination resides in the Ima-

the cause why Religion sought ever access to the mind by similitudes, types, parables, visions, dreams. And again in all persuasions that are wrought by eloquence and other impressions of like nature, which do paint and disguise the true appearance of things, the chief recommendation unto Reason is from the Imagination [127]. Nevertheless, because I find not any science that doth properly or fitly pertain to the Imagination, I see no cause to alter the former division. For as for Poesy, it is rather a pleasure or play of imagination, than a work or duty thereof. And if it be a work, we speak not now of such parts of learning as the Imagination produceth, but of such sciences as handle and consider of the Imagination; no more than we shall speak now of such knowledges as Reason produceth, (for that extendeth to all philosophy,) but of such knowledges as do handle and inquire of the faculty of Reason: so as Poesy had his true place [128]. As for the power of the Imagination in nature, and the manner of fortifying the same, we have mentioned it in the doctrine *De Anima*, whereunto most fitly it belongeth. And lastly, for Imaginative or Insinuative Reason, which is the subject of Rhetoric, we think it best to refer it to the Arts of Reason. So therefore we content ourselves with the former division, that Human Philosophy which respecteth the faculties of the mind of man hath two parts, Rational and Moral.

The part of Human Philosophy which is rational, is of all knowledges, to the most wits, the least delightful; and seemeth but a net of subtility and spinosity. For as it was truly said, that knowledge is *pabulum animi* [the food of the mind]; so in the nature of men's appetite to this food, most men are of the taste and stomach of the Israelites in the desert, that would fain have returned *ad ollas carnium* [to the flesh-pots], and were weary of manna; which, though it were celestial, yet seemed less nutritive and comfortable. So generally men taste well knowledges that are drenched in flesh and blood, Civil History, Morality, Policy, about the which men's affections, praises, fortunes, do turn and are conversant; but this same *lumen siccum* [this dry light], doth parch and offend most men's watery and soft natures. But to speak truly of things as they are in worth, Rational Knowledges are the keys of all other arts; for as Aristotle saith aptly and elegantly, *That the hand is the Instrument of Instruments, and the mind is the Form of Forms*: so these be truly said to be the Art of Arts: neither do they only direct, but likewise confirm and strengthen; even as the habit of shooting doth not only enable to shoot a nearer shoot, but also to draw a stronger bow.

The Arts Intellectual are four in number; divided according to the ends whereunto they are referred: for man's labour is to *invent* [129] that which is *sought* or *propounded*; or to *judge* that which is *invented*; or to *retain* that which is *judged*; or to *deliver over* that which is *retained*. So as the arts must be four; Art of Inquiry or Invention: Art of Examination or Judgment; Art of Custody or Memory; and Art of Elocution or Tradition.

[130] ¶ Invention is of two kinds, much differing; the one, of Arts and Sciences;

gination,—its seat being rather in the very citadel of the mind and understanding;—but that the divine grace uses the motions of the Imagination as an instrument of illumination, just as it uses the motions of the will as an instrument of virtue.

[127] This is better explained in the translation; where it is observed that the arts of speech by which men's minds are soothed, inflamed, or carried away, consist in exciting the Imagination till it gets the better of the Reason.

[128] This whole sentence is omitted in the translation; the reason for not altering the former division being stated simply thus: *Nam Phantasia scientias fere non parit; siquidem Poesis* (*quæ a principio Phantasiæ attributa est*) *pro lusu potius ingenii quam pro scientia habenda*. Poesy, which belongs properly to Imagination, is not to be considered as a part of *knowledge*; and the two other offices of the Imagination belong, one to the doctrine *de anima*, the other to Rhetoric. There is no occasion therefore to make a place for Imagination among the parts of knowledge which concern the faculties of the human mind.

[129] It may perhaps be worth while to observe that Bacon uses the word *invent* simply as equivalent to *invenire*—to find out. [130] De Aug. v. 2.

and the other, of Speech and Arguments. The former of these I do report deficient; which seemeth to me to be such a deficience as if in the making of an inventory touching the estate of a defunct it should be set down *that there is no ready money*. For as money will fetch all other commodities, so this knowledge is that which should purchase all the rest. And like as the West-Indies had never been discovered if the use of the mariner's needle had not been first discovered, though the one be vast regions and the other a small motion; so it cannot be found strange if sciences be no further discovered, if the art itself of invention and discovery hath been passed over.

That this part of knowledge is wanting, to my judgment standeth plainly confessed: for first, Logic doth not pretend to invent Sciences or the Axioms of Sciences, but passeth it over with a *cuique in sua arte credendum* [the knowledge that pertains to each art must be taken on trust from those that profess it]. And Celsus acknowledgeth it[131] gravely, speaking of the empirical and dogmatical sects of physicians, *That medicines and cures were first found out, and then after the reasons and causes were discoursed; and not the causes first found out, and by light from them the medicines and cures discovered.* And Plato in his Theætetus[132] noteth well, *That particulars are infinite, and the higher generalities give no sufficient direction; and that the pith of all sciences, which maketh the arts-man differ from the inexpert, is in the middle propositions, which in every particular knowledge are taken from tradition and experience.* And therefore we see that they which discourse of the inventions and originals of things, refer them rather to chance than to art, and rather to beasts, birds, fishes, serpents, than to men.

> Dictamnum genetrix Cretæa carpit ab Ida,
> Puberibus caulem foliis et flore comantem
> Purpureo: non illa feris incognita capris
> Gramina, cum tergo volucres hæsere sagittæ
> [A sprig of dittany his mother brought,
> Gathered by Cretan Ide; a stalk it is
> Of woolly leaf, crested with purple flower;
> Which well the wild-goat knows when in his side
> Sticks the winged shaft].

So that it was no marvel (the manner of antiquity being to consecrate inventors) that the Ægyptians had so few human idols in their temples, but almost all brute:

> Omnigenumque Deum monstra, et latrator Anubis,
> Contra Neptunum et Venerem, contraque Minervam, etc.
> [All kinds and shapes of Gods, a monstrous host,
> The dog Anubis foremost, stood arrayed
> 'Gainst Neptune, Venus, Pallas, etc.].

And if you like better the tradition of the Grecians, and ascribe the first inventions to men, yet you will rather believe that Prometheus first struck the flints, and marvelled at the spark, than that when he first struck the flints he expected the spark; and therefore we see the West-Indian Prometheus had no intelligence with the European, because of the rareness with them of flint, that gave the first occasion[133]. So as it should seem that hitherto men are

[131] See note on Nov. Org. i. 73.

[132] Instead of "Plato *in his Theætetus* noteth" the translation has *Plato non semel innuit.*

[133] This curious passage, which is omitted in the *De Augmentis*, must refer to what Bacon had read in Ramusio of the way in which the natives of the West Indian islands kindled their fires, by rubbing pieces of wood together. Several passages in Bacon's writings show that he was a reader of Ramusio. See Ramusio, vol. iii. p. 103. a. for Oviedo's description of the method.

In reality the coincidence between the customary mode of kindling fire in the West Indies and the superstitious usages of Europe is remarkable. The latter seem to point

rather beholden to a wild goat for surgery, or to a nightingale for music, or to the Ibis for some part of physic,[134] or to the pot lid that flew open for artillery, or generally to chance or anything else, than to Logic, for the invention of arts and sciences. Neither is the form of invention which Virgil describeth much other:

> Ut varias usus meditando extunderet artes
> Paulatim

[that practice with meditation might by degrees hammer out the arts]. For if you observe the words well, it is no other method than that which brute beasts are capable of, and do put in ure; which is *a perpetual intending or practising some one thing, urged and imposed by an absolute necessity of conservation of being*: for so Cicero saith very truly, *Usus uni rei deditus et naturam et artem sæpe vincit* [practice applied constantly to one thing will often do more than either nature or art can]. And therefore if it be said of men,

> Labor omnia vincit
> Improbus, et duris urgens in rebus egestas
> [Stern labour masters all,
> And want in poverty importunate],

it is likewise said of beasts, *Quis psittaco docuit suum* χαῖρε? [who taught the parrot to say how d'ye do?] Who taught the raven in a drowth to throw pebbles into an hollow tree where she spied water, that the water might rise so as she might come to it? Who taught the bee to sail through such a vast sea of air, and to find the way from a field in flower a great way off to her hive? Who taught the ant to bite every grain of corn that she burieth in her hill, lest it should take root and grow? And then the word *extundere*, which importeth the extreme difficulty, and the word *paulatim*, which importeth the extreme slowness, and we are where we were, even amongst the Ægyptians' gods; there being little left to the faculty of Reason, and nothing to the duty of Art, for matter of invention.

Secondly, the induction which the logicians speak of, and which seemeth familiar with Plato[135], whereby the Principles of sciences may be pretended

back to a time when the use of steel and flint was unknown. The Noth-feuer of the Germans was kindled by rubbing pieces of wood together. This fire, originally connected with the worship of Fro, was lighted when cattle were threatened with murrain, and they were made to pass through it. Dr. Jamieson in his Scottish Dictionary mentions precisely the same practice at a comparatively recent period in Scotland in a case in which the murrain had done great mischief. The long continuance of this practice is a sort of illustration of Spinoza's bitter remark that Superstition is the child of Adversity, there being no man, he observes, who in prosperity does not think himself wise enough to take care of himself. See Spinoza, *Trac. Theol. Politicus*, chap. i.: and for the German superstition Wolf's *Die deutsche Götterlehre*, pp. 27. 83.

The holy fire of Vesta, according to Festus (in voce *Ignis*), was rekindled when it had been allowed to go out, by friction of two pieces of wood. Plutarch's statement that the rays of the sun concentrated by reflection were employed for the purpose seems improbable, and is apparently founded on a misconception or mistranslation of some earlier account of the matter. Pliny mentions, but without reference to Vesta, this mode of kindling fire, and states that the best combination is laurel wood with ivy.—*R. L. E.*

It is worth observing that though the passage in the text is omitted in the *De Augmentis*, the substance of it is retained in the *Cogitata et Visa*. *Nam ideo in ignis invento Prometheum Novæ ab Europæo dissensisse, quod apud eos silicis non est copia.—J. S.*

[134] *pro lavationibus intestinorum.*—De Aug.

[135] This reference to Plato is omitted in the translation, as well as the allusion to the derivation of the middle propositions. The induction in question is merely described as "the form of induction which Logic proposes, whereby to discover and prove the principles of sciences".

to be invented, and so the middle propositions by derivation from the principles,—their form of induction, I say, is utterly vicious and incompetent: wherein their error is the fouler, because it is the duty of Art to perfect and exalt Nature; but they contrariwise have wronged, abused, and traduced nature. For he that shall attentively observe how the mind doth gather this excellent dew of knowledge, like unto that which the poet speaketh of, *Aërei mellis cœlestia dona* [the gift of heaven, aërial honey], distilling and contriving it out of particulars natural and artificial, as the flowers of the field and garden, shall find that the mind of herself by nature doth manage and act an induction much better than they describe it. For to conclude *upon an enumeration of particulars without instance contradictory* is no conclusion, but a conjecture; for who can assure (in many subjects) upon those particulars which appear of a side, that there are not other on the contrary side which appear not? As if Samuel should have rested upon those sons of Issay [136] which were brought before him, and failed of David, which was in the field. And this form (to say truth) is so gross, as it had not been possible for wits so subtile as have managed these things to have offered it to the world, but that they hasted to their *theories* and *dogmaticals*, and were imperious and scornful toward particulars; which their manner was to use but as *lictores* and *viatores*, for sergeants and whifflers, *ad summovendam turbam*, to make way and make room for their opinions, rather than in their true use and service. Certainly it is a thing may touch a man with a religious wonder, to see how the footsteps of seducement are the very same in divine and human truth: for as in divine truth man cannot endure to become as a child; so in human, they reputed the attending the Inductions (whereof we speak) as if it were a second infancy or childhood.

Thirdly, allow some Principles or Axioms were rightly induced, yet nevertheless certain it is that Middle Propositions cannot be deduced from them in subject of nature [137] by Syllogism, that is *by touch and reduction of them to principles in a middle term*. It is true that in sciences popular, as moralities, laws, and the like, yea and divinity (because it pleaseth God to apply himself to the capacity of the simplest), that form may have use; and in natural philosophy likewise, by way of argument or satisfactory reason, *quæ assensum parit, operis effœta est* [which procures assent but can do no work]: but the subtilty of nature and operations will not be enchained in those bonds: for Arguments consist of Propositions, and Propositions of Words; and Words are but the current tokens or marks of Popular Notions of things; which notions, if they be grossly and variably collected out of particulars, it is not the laborious examination either of consequences of arguments, or of the truth of propositions, that can ever correct that error; being (as the physicians speak) in the first digestion: and therefore it was not without cause, that so many excellent philosophers became Sceptics and Academics, and denied any certainty of knowledge or comprehension, and held opinion that the knowledge of man extended only to appearances and probabilities. It is true that in Socrates it was supposed to be but a form of irony, *Scientiam dissimulando simulavit* [an affection of knowledge under pretence of ignorance]: for he used to disable his knowledge, to the end to enhance his knowledge [138]; like the humour of Tiberius in his beginnings, that would reign, but would not acknowledge so much [139]; and in the later Academy, which Cicero embraced, this opinion also of *acatalepsia* (I doubt) was not held sincerely: for that all those which excelled in copie of speech seem to have chosen that sect, as that which was fittest to give glory to their eloquence and variable discourses; being rather like progresses of pleasure than journeys to an end. But assuredly many scattered in both Academies did hold it in subtilty and integrity. But here was their chief

[136] So in all three editions. The *De Augmentis* has *Isai*.
[137] *in rebus naturalibus, quæ participant ex materiâ.*—De Aug.
[138] *i.e.* pretended not to know what it was plain he knew, that he might be thought to know likewise what he knew not—*renunciando scilicet iis quæ manifesto sciebat ut eo modo ea etiam quæ nesciebat scire putaretur.*
[139] This allusion to Tiberius is omitted in the translation.

error; they charged the deceit upon the Senses; which in my judgment (notwithstanding all their cavillations) are very sufficient to certify and report truth, though not always immediately, yet by comparison [140], by help of instrument, and by producing and urging such things as are too subtile for the sense to some effect comprehensible by the sense, and other like assistance. But they ought to have charged the deceit upon *the weakness* [141] *of the intellectual powers and upon the manner of collecting and concluding upon the reports of the senses.* This I speak not to disable the mind of man, but to stir it up to seek help: for no man, be he never so cunning or practised, can make a straight line or perfect circle by steadiness of hand, which may be easily done by help of a ruler or compass [142].

Experientia literata, et interpretatio Naturæ.

This part of invention, concerning the invention of sciences, I purpose (if God give me leave) hereafter to propound; having digested it into two parts; whereof the one I term *Experientia literata*, and the other *Interpretatio Naturæ* [143]: the former being but a degree and rudiment of the latter. But I will not dwell too long, nor speak too great upon a promise.

¶ [144] The invention of speech or argument is not properly an invention: for to invent is to discover that we know not, and not to recover or resummon that which we already know; and the use of this invention is no other but *out of the knowledge whereof our mind is already possessed, to draw forth or call before us that which may be pertinent to the purpose which we take into our consideration.* So as, to speak truly, it is no *Invention*, but a *Remembrance* or *Suggestion*, with an application; which is the cause why the schools do place it after judgment, as subsequent and not precedent. Nevertheless, because we do account it a Chase as well of deer in an inclosed park as in a forest at large, and that it hath already obtained the name, let it be called invention: so as it be perceived and discerned, that the scope and end of this invention is readiness and present use of our knowledge, and not addition or amplification thereof.

To procure this ready use of knowledge there are two courses, Preparation and Suggestion [145]. The former of these seemeth scarcely a part of Knowledge, consisting rather of diligence than of any artificial erudition. And herein Aristotle wittily, but hurtfully, doth deride the sophists near his time, saying, *they did as if one that professed the art of shoe-making should not teach how to make up a shoe, but only exhibit in a readiness a number of shoes of all fashions and sizes.* But yet a man might reply, that if a shoemaker should have no shoes in

[140] There is nothing about comparison in the translation.

[141] In the translation he adds *contumacy—tum erroribus tum contumaciæ (quæ rebus ipsis morigera esse recusat)*—and also *pravis demonstrationibus*; an insertion which (though the observation is implied perhaps in the English) I have thought worth noticing; because these *pravæ demonstrationes* were Idols of the *Theatre*, of which in the *Advancement of Learning* there is no mention.

[142] This it is then (he adds, writing eighteen years later) which I have in hand, and am labouring with mighty effort to accomplish—namely to make the mind of man by help of art a match for the nature of things,—to discover an art of Indication and Direction whereby all other arts with their axioms and works may be detected and brought to light.

[143] The one being the method of inquiry which proceeds from one experiment to another by a kind of natural sagacity; the other that which proceeds from experiments to axioms, and thence by the light of the axioms to new experiments. *Aut enim defertur indicium ab experimentis ad experimenta, aut ab experimentis ad axiomata quæ et ipsa nova experimenta designent.* Of this *Experientia literata* there follows in the *De Augmentis* an exposition at considerable length; in which the several methods of experimenting are described, with illustrations. And this concludes the chapter, the exposition of the other part, the Interpretatio Naturæ, being reserved for the *Novum Organum*.

[144] De Aug. v. 3.

[145] In the translation he calls these respectively *Promptuaria* and *Topica*: the one being a collection of arguments such as you are likely to want, laid up ready for use; the other a system of directions to help you in looking for the thing you want to find.

his shop, but only work as he is bespoken, he should be weakly customed. But our Saviour, speaking of Divine Knowledge, saith, *that the kingdom of heaven is like a good householder, that bringeth forth both new and old store;* and we see the ancient writers of rhetoric do give it in precept, that pleaders should have the Places whereof they have most continual use ready handled in all the variety that may be; as that, to speak for the literal interpretation of the law against equity, and contrary; and to speak for presumptions and inferences against testimony, and contrary. And Cicero himself, being broken unto it by great experience, delivereth it plainly, that whatsoever a man shall have occasion to speak of (if he will take the pains), he may have it in effect premeditate, and handled *in thesi;* so that when he cometh to a particular, he shall have nothing to do but to put to names and times and places, and such other circumstances of individuals. We see likewise the exact diligence of Demosthenes; who in regard of the great force that the entrance and access into causes hath to make a good impression, had ready framed a number of prefaces for orations and speeches. All which authorities and precedents may overweigh Aristotle's opinion, that would have us change a rich wardrobe for a pair of shears.

But the nature of the collection of this provision or preparatory store, though it be common both to logic and rhetoric, yet having made an entry of it here, where it came first to be spoken of, I think fit to refer over the further handling of it to rhetoric.

The other part of Invention, which I term Suggestion, doth assign and direct us to certain *marks* or *places*, which may excite our mind to return and produce such knowledge as it hath formerly collected, to the end we may make use thereof. Neither is this use (truly taken) only to furnish argument to dispute probably with others, but likewise to minister unto our judgment to conclude aright within ourselves. Neither may these Places serve only to apprompt our invention, but also to direct our inquiry. For a faculty of wise interrogating is half a knowledge. For as Plato saith, *Whosoever seeketh, knoweth that which he seeketh for in a general notion; else how shall he know it when he hath found it?* And therefore the larger [146] your Anticipation is, the more direct and compendious is your search. But the same Places which will help us what to produce of that which we know already, will also help us, if a man of experience were before us, what questions to ask; or if we have books and authors to instruct us, what points to search and revolve: so as I cannot report [147] that this part of invention, which is that which the schools call Topics, is deficient.

Nevertheless Topics are of two sorts, *general* and *special*. The general we have spoken to; but the particular hath been touched by some, but rejected generally as inartificial and variable. But leaving the humour which hath reigned too much in the schools, (which is to be vainly subtile in a few things which are within their command, and to reject the rest), I do receive particular

[146] *amplior et* certior.—De Aug.

[147] Thus the sentence stands both in the original and in the editions of 1629 and 1633; though I do not understand the connexion between it and the sentence preceding. Possibly an intermediate sentence has dropped out, or some alteration has been inadvertently made which disturbs the construction. In the translation the arrangement of the whole passage is changed, and all is made clear. He begins by dividing Topics into two kinds, General and Particular. The General (he says) has been sufficiently handled in Logic, and therefore he leaves it with a passing remark (*illud tamen obiter monendum videtur*) to the effect of that in the text; "neither is this use," etc. down to "search and revolve". But Particular Topics, he proceeds, are more to the purpose and of great value, and have not received the attention they deserve. He then goes on to explain at length what he means; repeating the observations in the next paragraph with some amplification and greater clearness, and then giving a specimen of the thing, in a series of Particular Topics or articles of inquiry concerning Heavy and Light; with which the chapter concludes. With regard to the importance of these *Topicæ* as a part of Bacon's method of inquiry—an importance so considerable that he meant to devote a special work to the subject,—see my prefaces to the *Parasceve* and to the *Topica Inquisitionis de Luce et Lumine.*

Topics, that is places or directions of invention and inquiry in every particular knowledge, as things of great use; being mixtures of Logic with the matter of sciences; for in these it holdeth, *Ars inveniendi adolescit cum inventis* [every act of discovery advances the art of discovery]; for as in going of a way we do not only gain that part of the way which is passed, but we gain the better sight of that part of the way which remaineth; so every degree of proceeding in a science giveth a light to that which followeth; which light if we strengthen, by drawing it forth into questions or places of inquiry, we do greatly advance our pursuit.

¶ [148] Now we pass unto the arts of Judgment, which handle the natures of Proofs and Demonstrations; which as to Induction hath a coincidence with Invention; *for in all inductions, whether in good or vicious form, the same action of the mind which inventeth, judgeth; all one as in the sense;* but otherwise it is in proof by syllogism; for the proof being not immediate but by mean, *the invention of the mean* is one thing, and the *judgment of the consequence* is another; the one exciting only, the other examining. Therefore for the real and exact form of judgment we refer ourselves to that which we have spoken of *Interpretation of Nature.*

For the other judgment by Syllogism, as it is a thing most agreeable to the mind of man, so it hath been vehemently and excellently laboured. For the nature of man doth extremely covet to have somewhat in his understanding fixed and immoveable, and as a rest and support of the mind. And therefore as Aristotle endeavoureth to prove that in all motion there is some point quiescent; and as he elegantly expoundeth the ancient fable of Atlas (that stood fixed and bare up the heaven from falling) to be meant of the poles or axle-tree of heaven, whereupon the conversion is accomplished; so assuredly men have a desire to have an Atlas or axle-tree within to keep them from fluctuation, which is like to a perpetual peril of falling; therefore men did hasten to set down some Principles about which the variety of their disputations might turn.

So then this art of Judgment is but *the reduction of propositions to principles in a middle term;* the Principles to be agreed by all and exempted from argument; the Middle Term to be elected at the liberty of every man's invention; the Reduction to be of two kinds, direct and inverted; the one when the proposition is reduced to the principle, which they term a *Probation ostensive:* the other when the contradictory of the proposition is reduced to the contradictory of the principle, which is that which they call *per incommodum,* or *pressing an absurdity;* the number of middle terms to be [149] as the proposition standeth degrees more or less removed from the principle.

But this art hath two several methods of doctrine; the one by way of direction, the other by way of caution: the former frameth and setteth down a true form of consequence, by the variations and deflexions from which errors and inconsequences may be exactly judged; toward the composition and structure of which form, it is incident to handle the parts thereof, which are propositions, and the parts of propositions, which are simple words [150]; and this is that part of logic which is comprehended in the Analytics.

The second method of doctrine was introduced for expedite use and assurance sake; discovering the more subtile forms of sophisms and illaqueations with their redargutions, which is that which is termed *Elenches.* For although in the more gross sorts of fallacies it happeneth (as Seneca maketh the comparison well) as in juggling feats, which though we know not how they are done, yet we know well it is not as it seemeth to be; yet the more subtile sort of them doth not only put a man besides his answer, but doth many times abuse his judgment.

This part concerning *Elenches* [151] is excellently handled by Aristotle in pre-

[148] De Aug. v. 4.

[149] *i.e.* to be more or fewer.

[150] This clause is omitted in the translation; and a new observation is introduced in its place; viz. that though this direction contains in itself a kind of Elenche or confutation (for the straight indicates the crooked), yet it is safest to employ Elenches (that is, Elenches properly so called) as monitors, for the better detection of fallacies by which the judgment would otherwise be ensnared.

[151] In the translation the Doctrine of Elenches is divided into three kinds—*Elenchos*

cept, but more excellently by Plato in example, not only in the persons of the Sophists, but even in Socrates himself; who professing to affirm nothing, but to infirm that which was affirmed by another, hath exactly expressed all the forms of objection, fallace [152], and redargution. And although we have said that the use of this doctrine is for redargution, yet it is manifest the degenerate and corrupt use is for caption and contradiction [153]; which passeth for a great faculty, and no doubt is of very great advantage: though the difference be good which was made between orators and sophisters, that the one is as the greyhound, which hath his advantage in the race, and the other as the hare, which hath her advantage in the turn, so as it is the advantage of the weaker creature.

But yet further, this doctrine of *Elenches* hath a more ample latitude and extent than is perceived; namely, unto divers parts of knowledge; whereof some are laboured and other omitted. For first, I conceive (though it may seem at first somewhat strange) that that part which is variably referred sometimes to Logic sometimes to Metaphysic, touching the *common adjuncts* of *essences*, is but an elenche [154]; for the great sophism of all sophisms being equivocation or ambiguity of words and phrase, specially of such words as are most general and intervene in every inquiry, it seemeth to me that the true and fruitful use (leaving vain subtilties and speculations) of the inquiry of majority, minority, priority, posteriority, identity, diversity, possibility, act, totality, parts, existence, privation, and the like, are but wise cautions against ambiguities of speech. So again the distribution of things into certain tribes, which we call categories or predicaments, are but cautions against the confusion of definitions and divisions.

Secondly, there is a seducement that worketh by the strength of the impression and not by the subtilty of the illaqueation; not so much perplexing the reason as overruling it by power of the imagination. But this part I think more proper to handle when I shall speak of Rhetoric [155].

But lastly, there is yet a much more important and profound kind of fallacies in the mind of man, which I find not observed or enquired at all, and think good to place here, as that which of all others appertaineth most to rectify judgment: the force whereof is such, as it doth not dazzle or snare the understanding in some particulars, but doth more generally and inwardly infect and corrupt the state thereof [156]. For the mind of man is far from the nature of a clear and equal glass, wherein the beams of things should reflect according to their true incidence; nay, it is rather like an enchanted glass, full of superstition and imposture, if it be not delivered and reduced. For this purpose, let us consider the false appearances that are imposed upon us by the general nature of the mind [157], beholding them in an example or two; as first, in that instance which is the root of all superstition, namely, *That to the nature of the mind of all men it is consonant for the affirmative or active to affect more than the negative or privative:*

Sophismatum, Elenchos Hermeniæ, Elenchos imaginum sive Idolorum: *i.e.* Cautions against Sophisms, against ambiguity of words, against Idols or false appearances; and it is to the first only that the observation which follows is applied.

[152] So in all the editions; and not (I think) a misprint for *fallacie*, but another word, formed not from *fallacia* but from *fallax*. Compare "Colours of Good and Evil", § 1. "The *fallax* of this colour," etc.

[153] *i.e.* the true sense is to answer sophistical arguments, the corrupt use to invent sophistical objections.

[154] This is the part which in the translation he calls *Elenchos Hermeniæ;* and explains much more clearly and fully.

[155] This paragraph was omitted altogether in the translation.

[156] Here we have the doctrine of Idols, in its earliest form; the names not being yet given, and the Idols of the Theatre not yet introduced into the company. For the history of this doctrine see preface to the *Novum Organum*, note C. In the *De Augmentis* the names are given, and the fourth kind mentioned, though only to be set aside as not belonging to the present argument. The exposition of the three first is also considerably fuller than here, though not nearly so full as in the *Novum Organum*, to which we are referred.

[157] These are the Idols of the Tribe.

so that a few times hitting or presence, countervails oft-times failing or absence [158]; as was well answered by Diagoras to him that shewed him in Neptune's temple the great number of pictures of such as had scaped shipwrack and had paid their vows to Neptune, saying, *Advise now, you that think it folly to invocate Neptune in tempest: Yea but* (saith Diagoras) *where are they painted that are drowned?* Let us behold it in another instance, namely, *That the spirit of man, being of an equal and uniform substance, doth usually suppose and feign in nature a greater equality and uniformity than is in truth.* Hence it cometh that the mathematicians cannot satisfy themselves, except they reduce the motions of the celestial bodies to perfect circles, rejecting spiral lines, and labouring to be discharged of eccentrics. Hence it cometh, that whereas there are many things in nature as it were *monodica* [159], *sui juris* [singular, and like nothing but themselves]; yet the cogitations of man do feign unto them relatives, parallels, and conjugates, whereas no such thing is; as they have feigned an element of Fire, to keep square with Earth, Water, and Air, and the like: nay, it is not credible, till it be opened, what a number of fictions and fancies the similitude of human actions and arts [160], together with the making of man *communis mensura*, have brought into Natural Philosophy; not much better than the heresy of the Anthropomorphites, bred in the cells of gross and solitary monks, and the opinion of Epicurus, answerable to the same in heathenism, who supposed the gods to be of human shape. And therefore Velleius the Epicurian [161] needed not to have asked, why God should have adorned the heavens with stars, as if he had been an Ædilis, one that should have set forth some magnificent shews or plays. For if that great work-master had been of an human disposition, he would have cast the stars into some pleasant and beautiful works and orders, like the frets in the roofs of houses; whereas one can scarce find a posture in square or triangle or straight line amongst such an infinite number; so differing an harmony there is between the spirit of Man and the spirit of Nature.

Let us consider again the false appearances imposed upon us by every man's own individual nature and custom [162], in that feigned supposition that Plato maketh of the cave: for certainly if a child were continued in a grot or cave under the earth until maturity of age, and came suddenly abroad, he would have strange and absurd imaginations; so in like manner, although our persons live in the view of heaven, yet our spirits are included in the caves of our own complexions and customs; which minister unto us infinite errors and vain opinions, if they be not recalled to examination [163]. But hereof we have given many examples in one of the errors, or peccant humours, which we ran briefly over in our first book.

And lastly, let us consider the false appearances that are imposed upon us by words [164], which are framed and applied according to the conceit and capacities of the vulgar sort: and although we think we govern our words, and prescribe it

[158] which (he adds in the translation) is the root of all superstition and vain credulity, in matters of astrology, dreams, omens, &c.

[159] So the word is spelt throughout Bacon's writings, as observed by Mr. Ellis, *infra*. The introduction here of *sui juris* as the Latin equivalent seems to show that the error arose from a mistake as to the etymology of the Greek word.

[160] *i.e.* the supposed resemblance between the arts and actions of M n and the operations of Nature: *naturalium operationum ad similitudinem actionum humanarum reductio: hoc ipsum inquam, quod putetur talia naturam facere qualia Homo facit.*

[161] So in the original: the word being pronounced in Bacon's time *Epicurian*. See *Walker on Shakespeare's versification*, p. 211.

[162] These are the Idols of the Cave.

[163] *i.e.* if they be not corrected by the continual contemplation of nature at large: *sive specu sua raro tantum et ad breve aliquod tempus prodeant, et non in contemplatione naturæ perpetuo, tanquam sub dio, morentur.*

It may be worth observing that Bacon guards himself against being supposed to represent the full intention of Plato's parable, by adding in a parenthesis *missa illa exquisita parabolæ subtilitate.*

[164] These are the Idols of the Market-place.

well, *Loquendum ut vulgus, sentiendum ut sapientes* [a man should speak like the vulgar, and think like the wise], yet certain it is that words, as a Tartar's bow, do shoot back upon the understanding of the wisest, and mightily entangle and pervert the judgment; so as it is almost necessary in all controversies and disputations to imitate the wisdom of the Mathematicians, in setting down in the very beginning the definitions of our words and terms, that others may know how we accept and understand them, and whether they concur with us or no [165]. For it cometh to pass for want of this, that we are sure to end there where we ought to have begun, which is in questions and differences about words. To conclude therefore, it must be confessed that it is not possible to divorce ourselves from these fallacies and false appearances, because they are inseparable from our nature and condition of life; so yet nevertheless the caution of them (for all elenches, as was said, are but cautions) doth extremely import the true conduct of human judgment. The particular elenches or cautions against these three false appearances I find altogether deficient.

Elenchi magni, sive de Idolis animi humani, nativis et adventitiis.

There remaineth one part of judgment of great excellency, which to mine understanding is so slightly touched, as I may report that also deficient; which is the application of the differing kinds of proofs to the differing kinds of subjects; for there being but four kinds of demonstrations, that is, by the immediate consent of the mind or sense; by induction; by sophism; and by congruity, which is that which Aristotle calleth *demonstration in orb or circle*, and not *a notioribus* [166]; every of these hath certain subjects in the matter of sciences, in which respectively they have chiefest use; and certain other, from which respectively they ought to be excluded: and the rigour and curiosity in requiring the more severe proofs in some things, and chiefly the facility in contenting ourselves with the more remiss proofs in others, hath been amongst the greatest causes of detriment and hindrance to knowledge. The distributions and assignations of demonstrations, according to the analogy of sciences, I note as deficient.

De Analogia Demonstrationum.

¶ [167] The custody or retaining of knowledge is either in Writing or Memory; whereof Writing hath two parts, the nature of the *character*, and the order of the *entry*. For the art of *characters*, or other visible notes of words or things, it hath nearest conjugation with grammar, and therefore I refer it to the due place [168]. For the *disposition* and *collocation* of that knowledge which we preserve in writing, it consisteth in a good digest of commonplaces; wherein I am not ignorant of the prejudice imputed to the use of common-place books, as causing a retardation of reading, and some sloth or relaxation of memory. But because it is but a counterfeit thing in knowledges to be forward and pregnant, except a man be deep and full, I hold the entry of common-places to be a matter of great use and essence in studying; as that which assureth copie of invention, and contracteth judgment to a strength. But this is true, that of the *methods* of common-places that I have seen, there is none of any sufficient worth; all of them carrying merely the face of a *school*, and not of a *world*; and referring to vulgar matters and pedantical divisions without all life or respect to action.

For the other principal part of the custody of knowledge, which is Memory,

[165] It might seem from this that Bacon thought the premising of definitions would be a sufficient remedy for the evil. But in the translation he changes the sentence and expressly warns us that it is not; for the definitions themselves, he says, are made of *words*; and though we think to remove ambiguities by the use of technical terms, etc., yet all is not enough, and we must look for a remedy which goes deeper.

[166] *non a notioribus scilicet, sed tanquam de plano.*—De Aug. [167] De Aug. v. 5.

[168] All this is omitted in the translation. The art of retaining knowledge is divided into two doctrines: viz. concerning the helps (*adminicula*) of memory, and concerning Memory itself. The only help of memory which is mentioned is writing; concerning which, after remarking that without this help the memory cannot be trusted to deal with matters of length and requiring exactness, especially such as the interpretation of nature, he insists upon the value of a good digest of common-places even in the old and popular sciences, and so proceeds as in the text.

I find that faculty in my judgment weakly enquired of. An art there is extant of it; but it seemeth to me that there are better precepts than that art, and better practices of that art than those received. It is certain the art (as it is) may be raised to points of ostentation prodigious: but in use (as it is now managed) it is barren; not burdensome nor dangerous to natural memory, as is imagined, but barren; that is, not dexterous to be applied to the serious use of business and occasions. And therefore I make no more estimation of repeating a great number of names or words upon once hearing, or the pouring forth of a number of verses or rhymes *ex tempore*, or the making of a satirical simile of every thing, or the turning of every thing to a jest, or the falsifying or contradicting of every thing by cavil, or the like, (whereof in the faculties of the mind there is great copie, and such as by device and practice may be exalted to an extreme degree of wonder,) than I do of the tricks of tumblers, funambuloes, baladines; the one being the same in the mind that the other is in the body; matters of strangeness without worthiness.

This art of Memory is but built upon two intentions; the one Prenotion, the other Emblem. Prenotion dischargeth the indefinite seeking of that we would remember, and directeth us to seek in a narrow compass; that is, somewhat that hath congruity with our *place of memory*. Emblem reduceth conceits intellectual to images sensible, which strike the memory more; out of which axioms may be drawn much better practique than that in use; and besides which axioms, there are divers more touching help of memory, not inferior to them [169]. But I did in the beginning distinguish, not to report those things deficient, which are but only ill managed.

¶ [170] There remaineth the fourth kind of Rational Knowledge, which is transitive, concerning the expressing or transferring our knowledge to others; which I will term by the general name of Tradition or Delivery. Tradition hath three parts; the first concerning the *organ* of tradition; the second concerning the *method* of tradition; and the third concerning the *illustration* of tradition [171].

For the organ of tradition, it is either Speech or Writing: for Aristotle saith well, *Words are the images of cogitations, and letters are the images of words*; but yet it is not of necessity that cogitations be expressed by the medium of words. For *whatsoever is capable of sufficient differences* [172], *and those perceptible by the sense, is in nature competent to express* [173] *cogitations.* And therefore we see in the commerce of barbarous [174] people that understand not one another's language, and in the practice of divers that are dumb and deaf, that men's minds are expressed in gestures, though not exactly, yet to serve the turn. And we understand further [175] that it is the use of China and the kingdoms of the high Levant to write in Characters Real, which express neither letters nor words in gross, but Things or Notions; insomuch as countries and provinces, which understand not one another's language, can nevertheless read one another's writings, because the characters are accepted more generally than the languages do extend; and therefore they have a vast multitude of characters; as many, I suppose, as radical words [176].

These Notes of Cogitations are of two sorts; the one when the note hath some similitude or congruity with the notion; the other *ad placitum*, having force

[169] The nature and use of these prænotions and emblems is explained and illustrated in the translation by several examples; but the substance of the observation is not altered.

[170] De Aug. vi. 1.

[171] In the *De Augmentis*, *tradition* (in these last three cases) is translated *sermo*; which appears to be used in the general sense of *communication*.

[172] *i.e.* sufficient to explain the variety of notions.

[173] *i.e.* to convey the cogitations of one man to another (*fieri posse vehiculum cogitationum de homine in hominem*), and so to be an organ of *tradition* (*traditivæ*).

[174] *Barbarous* is omitted in the translation: the thing being equally seen in civilized people who know no common language.

[175] *notissimum fieri jam cœpit.*

[176] This observation is transferred in the *De Augmentis* to the next paragraph, and applied generally to all systems of writing in Characters Real.

only by contract or acceptation. Of the former sort are Hieroglyphics and Gestures. For as to Hieroglyphics, (things of ancient use, and embraced chiefly by the Ægyptians, one of the most ancient nations), they are but as continued impresses and emblems. And as for Gestures, they are as transitory Hieroglyphics, and are to Hieroglyphics as words spoken are to words written, in that they abide not; but they have evermore, as well as the other, an affinity with the things signified: as Periander, being consulted with how to preserve a tyranny newly usurped, bid the messenger attend and report what he saw him do; and went into his garden and topped all the highest flowers; signifying, that it consisted in the cutting off and keeping low of the nobility and *grandes*[177]. *Ad placitum* are the Characters Real before mentioned, and Words: although some have been willing by curious inquiry, or rather by apt feigning, to have derived imposition of names from reason and intendment; a speculation elegant, and, by reason it searcheth into antiquity, reverent; but sparingly mixed with truth, and of small fruit[178]. This portion of knowledge, touching the Notes of Things and cogitations in general, I find not enquired, but deficient. And although it may seem of no great use, considering that words and writings by letters do far excel all the other ways; yet because this part concerneth as it were the mint of knowledge, (for words are the tokens current and accepted for conceits, as moneys are for values, and that it is fit men be not ignorant that moneys may be of another kind than gold and silver), I thought good to propound it to better enquiry.

De Notis Rerum.

Concerning Speech and Words, the consideration of them hath produced the science of Grammar: for man still striveth to reintegrate himself in those benedictions, from which by his fault he hath been deprived; and as he hath striven against the first general curse by the invention of all other arts, so hath he sought to come forth of the second general curse (which was the confusion of tongues) by the art of Grammar: whereof the use in a mother[179] tongue is small; in a foreign tongue more; but most in such foreign tongues as have ceased to be vulgar tongues, and are turned only to learned tongues. The duty of it is of two natures; the one popular[180], which is for the speedy and perfect attaining languages, as well for intercourse of speech as for understanding of authors; the other philosophical, examining the power and nature of words as they are the footsteps and prints of reason: which kind of analogy between words and reasons is handled *sparsim*, brokenly, though not entirely[181]; and therefore I cannot report it deficient, though I think it very worthy to be reduced into a science by itself.

Unto Grammar also belongeth, as an appendix, the consideration of the Accidents of Words; which are measure, sound, and elevation or accent, and the sweetness and harshness of them; whence hath issued some curious observations

[177] So in the original; and I believe always in Bacon; the Spanish word being still treated as a foreigner, and the accent falling no doubt upon the first syllable.

[178] The substance of this remark is introduced in the translation in another place. Here it is merely said that Characters Real have nothing emblematic in them; but are merely *surds*, framed *ad placitum* and silently agreed upon by custom.

[179] *in another tongue* ed. 1605: *in mother tongue* edd. 1629 and 1633. The translation has *in linguis quibusque vernaculis*.

[180] In the translation he substitutes *literary* for *popular*.

[181] Here are introduced in the translation some interesting remarks on the subject of the analogy between words and reason; in which it is worth observing, among other things, that Bacon appears to have changed his opinion as to the nature of Cæsar's book *De Analogia*, since he wrote the first book of the *Advancement*. See above, p. 70. There he describes it as "a grammatical philosophy, wherein he did labour to make this same *vox ad placitum* to become *vox ad licitum*, and to reduce custom of speech to congruity of speech, and took as it were the picture of words from the life of reason". Here he says he has doubted whether that book of Cæsar's treated of such a grammatical philosophy as he is speaking of; but that he rather suspects it contained nothing very high or subtile, but only precepts for the formation of a chaste and perfect style, free from vulgarity and affectation.

in Rhetoric, but chiefly Poesy, as we consider it in respect of the verse and not of the argument: wherein though men in learned tongues do tie themselves to the ancient measures, yet in modern languages it seemeth to me as free to make new measures of verses as of dances; for a dance is a measured pace, as a verse is a measured speech [182]. In these things the sense is better judge than the art

Cœnæ fercula nostræ
Mallem convivis quam placuisse cocis

[the dinner is to please the guests that eat it, not the cook that dresses it]. And of the servile expressing antiquity in an unlike and an unfit subject, it is well said, *Quod tempore antiquum videtur, id incongruitate est maxime novum* [there is nothing more new than an old thing that has ceased to fit].

For Ciphers, they are commonly in letters or alphabets, but may be in words. The kinds of Ciphers (besides the simple ciphers with changes and intermixtures of nulls and non-significants) are many, according to the nature or rule of the infolding; Wheel-ciphers, Key-ciphers, Doubles, etc. But the virtues of them, whereby they are to be preferred, are three; that they be not laborious to write and read; that they be impossible to decipher; and, in some cases, that they be without suspicion. The highest degree whereof is to write *omnia per omnia;* which is undoubtedly possible, with a proportion quintuple at most of the writing infolding to the writing infolded, and no other restraint whatsoever [183]. This art of Ciphering, hath for relative an art of Disciphering; by supposition [184] unprofitable; but, as things are, of great use. For suppose that ciphers were well managed, there be multitudes of them which exclude the discipherer. But in regard of the rawness and unskilfulness of the hands through which they pass, the greatest matters are many times carried in the weakest ciphers.

In the enumeration of these private and retired arts, it may be thought I seek to make a great muster-roll of sciences; naming them for shew and ostentation, and to little other purpose. But let those which are skilful in them judge whether I bring them in only for appearance, or whether in that which I speak of them (though in few marks) there be not some seed of proficience. And this must be remembered, that as there be many of great account in their countries and provinces, which when they come up to the Seat of the Estate are but of mean rank and scarcely regarded; so these arts being here placed with the principal and supreme sciences, seem petty things; yet to such as have chosen them to spend their studies in them [185], they seem great matters.

¶ [186] For the Method of Tradition, I see it hath moved a controversy in our

[182] This observation is omitted in the translation, and instead we have a censure of the attempts (made not long before Bacon's time) to force the modern languages into the ancient measures; measures (he says) which are incompatible with the frame of the languages themselves, and not less offensive to the ear. But this censure may perhaps be considered as a development of the remark which concludes this paragraph, and which is also omitted. Certainly there is no English metre which represents the metrical effect of the Virgilian hexameter worse than the English hexameter as people write it now; and if any one would try to write it so as to represent the metrical effect truly, by attending to the distinction between accent and quantity, and distributing them according to the same laws, he would find the truth of Bacon's remark that *ipsæ linguæ fabrica respuit;* the English language does not supply the materials.

[183] In the *De Augmentis* he gives a specimen of a cipher by which this feat of writing *omnia per omnia* (that is of conveying any words you please under cover of any other words you please, provided only that they contain not less than five times as many letters) may be accomplished; a cipher invented, he says, by himself when he was at Paris.

[184] *i.e.* if things were as they might be: *attamen præcautione solerti fieri possit inutilis.*

[185] *qui operam illis præcipue impenderint.*—De Aug. The original edition and that of 1629 have "to spend their labours studies in them",—which is also the reading of the edition 1633, except that it has a comma after "labours". "Labours and studies" is the reading of modern editions; but I think it is more likely that one of the words was meant to be substituted for the other.

[186] De Aug. vi. 2.

time[187]. But as in civil business, if there be a meeting and men fall at words there is commonly an end of the matter for that time and no proceeding at all; so in learning, where there is much controversy there is many times little inquiry. For this part of knowledge of Method seemeth to me so weakly enquired as I shall report it deficient.

Method hath been placed, and that not amiss, in Logic, as a part of Judgment: for as the doctrine of Syllogisms comprehendeth the rules of judgment upon that which is invented, so the doctrine of Method containeth the rules of judgment upon that which is to be delivered; for judgment precedeth Delivery, as it followeth Invention[188]. Neither is the method or the nature of the tradition material only to the *use* of knowledge, but likewise to the *progression* of knowledge: for since the labour and life of one man cannot attain to perfection of knowledge, the wisdom of the Tradition is that which inspireth the felicity of continuance and proceeding. And therefore the most real diversity of method is of method referred to Use, and method referred to Progression; whereof the one may be termed Magistral, and the other of Probation[189].

The later whereof seemeth to be *via deserta et interclusa* [a way that is abandoned and stopped up]. For as knowledges are now delivered, there is a kind of contract of error between the deliverer and the receiver: for he that delivereth knowledge desireth to deliver it in such form as may be best believed, and not as may be best examined; and he that receiveth knowledge desireth rather present satisfaction than expectant inquiry; and so rather not to doubt than not to err; glory making the author not to lay open his weakness, and sloth making the disciple not to know his strength.

But knowledge that is delivered as a thread to be spun on, ought to be delivered and intimated[190], if it were possible, *in the same method wherein it was invented*; and so is it possible of knowledge induced. But in this same anticipated and prevented knowledge, no man knoweth how he came to the knowledge which he hath obtained. But yet nevertheless, *secundum majus et minus*, a man may revisit and descend unto the foundations of his knowledge and consent; and so transplant it into another as it grew in his own mind. For it is in knowledges as it is in plants: if you mean to use the plant, it is no matter for the roots; but if you mean to remove it to grow, then it is more assured to rest upon roots than slips. So the delivery of knowledges (as it is now used) is as of fair bodies of trees without the roots; good for the carpenter, but not for the planter; but if you will have sciences grow, it is less matter for the shaft or body of the tree, so you look well to the taking up of the roots. Of which kind of delivery the method of the mathematiques, in that subject, hath some shadow; but generally I see it neither put in ure nor put in inquisition, and therefore note it for deficient.

De Methodo sincera, sive ad filios Scientiarum[191].

Another diversity of Method there is, which hath some affinity with the former, used in some cases by the discretion of the ancients, but disgraced since by the impostures of many vain persons, who have made it as a false light for their counterfeit merchandises; and that is, Enigmatical and Disclosed[192]. The pretence

[187] Besides Ramus himself and Carpentier, one of the principal persons in this controversy was the Cardinal D'Ossat, of whom some account will be found in De Thou's memoirs.—*R. L. E.* [188] So edd. 1629 and 1633. The original has *Inventions*.

[189] Called *Initiativa* in the translation; and explained to mean the method which discloses the inner mysteries of science; and distinguished from the other not as more secret but as more profound; the one announcing the results of enquiry, the other exhibiting the method and process which led to them.

[190] So in all the editions; but probably a misprint for *insinuated*. The translation has *insinuanda*.

[191] In the translation he gives it the additional name of *Traditio Lampadis*; alluding to the transmission of the lighted torch from one to another in the Greek torch-race. See Preface to *Nov. Org.* p. 222, note.

[192] In the translation he calls the latter *exoterica*, the former *acroamatica*; and explains that the affinity between the *acroamatica* and the *initiativa* lies in this only—that

whereof[193] is to remove the vulgar capacities from being admitted to the secrets of knowledges, and to reserve them to selected auditors, or wits of such sharpness as can pierce the veil.

Another diversity of Method, whereof the consequence is great, is the delivery of knowledge in Aphorisms, or in Methods; wherein we may observe that it hath been too much taken into custom, out of a few Axioms or observations upon any subject to make a solemn and formal art; filling it with some discourses, and illustrating it with examples, and digesting it into a sensible Method; but the writing in Aphorisms hath many excellent virtues, whereto the writing in Method doth not approach.

For first, it trieth the writer, whether he be superficial or solid: for Aphorisms, except they should be ridiculous, cannot be made but of the pith and heart of sciences; for discourse of illustration is cut off; recitals of examples are cut off discourse of connexion and order is cut off; descriptions of practice are cut off; so there remaineth nothing to fill the Aphorisms but some good quantity of observation: and therefore no man can suffice, nor in reason will attempt, to write aphorisms, but he that is sound and grounded. But in Methods,

Tantum series juncturaque pollet,
Tantum de medio sumptis accedit honoris

[the arrangement and connexion and joining of the parts has so much effect], as a man shall make a great shew of an art, which if it were disjointed would come to little. Secondly, Methods are more fit to win consent or belief, but less fit to point to action; for they carry a kind of demonstration in orb or circle, one part illuminating another, and therefore satisfy; but particulars, being dispersed, do best agree with dispersed directions. And lastly, Aphorisms, representing a knowledge broken, do invite men to enquire farther; whereas Methods, carrying the shew of a total, do secure men, as if they were at furthest.

Another diversity of Method, which is likewise of great weight, is the handling of knowledge by Assertions and their Proofs, or by Questions and their Determinations; the latter kind whereof, if it be immoderately followed, is as prejudicial to the proceeding of learning, as it is to the proceeding of an army to go about to besiege every little fort or hold. For if the field be kept and the sum of the enterprise pursued, those smaller things will come in of themselves: indeed[194] a man would not leave some important piece enemy at his back. In like manner, the use of confutation in the delivery of sciences ought to be very sparing; and to serve to remove strong preoccupations and prejudgments, and not to minister and excite disputations and doubts.

Another diversity of Methods is *according to the subject or matter which is handled*; for there is a great difference in delivery of the Mathematics, which are the most abstracted of knowledges, and Policy, which is the most immersed: and howsoever contention hath been moved touching an uniformity of method in multiformity of matter, yet we see how that opinion, besides the weakness of it, hath been of ill desert towards learning, as that which taketh the way to reduce learning to certain empty and barren generalities; being but the very husks and shells of sciences, all the kernel being forced out and expulsed with the torture and press of the method;[195] and therefore as I did allow well of particular Topics for invention, so I do allow likewise of particular Methods of tradition.

each addresses itself to a select audience; for in themselves (*re ipsa*) they are opposite; the *initiativa* adopting a method of delivery more open than ordinary; the *acroamatica*, one more obscure; the "vulgar capacities" being excluded in the one case by the necessary subtilty of the argument, in the other by an affected obscurity in the exposition. Concerning the latter method, see Preface to the *Novum Organum*, note B.

[193] *i.e.* of the enigmatical method.

[194] *i.e.* "although indeed": (*illud tamen inficias non iverim*, etc.).

[195] This observation is introduced in the translation at the beginning of the chapter, and applied particularly to the method of *dichotomies;* which are not mentioned, I think, by name in the *Advancement*.

Another diversity of judgment [196] in the delivery and teaching of knowledge is *according unto the light and presuppositions of that which is delivered* ; for that knowledge which is new and foreign from opinions received, is to be delivered in another form than that that is agreeable [197] and familiar ; and therefore Aristotle, when he thinks to tax Democritus, doth in truth commend him, where he saith, *If we shall indeed dispute, and not follow after similitudes*, etc. For those whose conceits are seated in popular opinions, need only but to prove or dispute ; but those whose conceits are beyond popular opinions, have a double labour ; the one to make themselves conceived, and the other to prove and demonstrate ; so that it is of necessity with them to have recourse to similitudes and translations to express themselves. And therefore in the infancy of learning, and in rude times, when those conceits which are now trivial were then new, the world was full of Parables and Similitudes ; for else would men either have passed over without mark or else rejected for paradoxes that which was offered, before they had understood or judged. So in divine learning we see how frequent Parables and Tropes are [198] : for it is a rule, *That whatsoever science is not consonant to presuppositions, must pray in aid of similitudes.*

There be also other diversities of Methods, vulgar and received ; as that of Resolution or Analysis, of Constitution or Systasis, of Concealment or Cryptic [199], &c. which I do allow well of ; though I have stood upon those which are least handled and observed. All which I have remembered to this purpose, because I would erect and constitute one general inquiry, which seems to me deficient, touching the Wisdom of Tradition. *De prudentia Traditionis.*

But unto this part of knowledge concerning Method doth further belong not only the Architecture of the whole frame of a work, but also the several beams and columns thereof ; not as to their stuff, but as to their quantity and figure ; and therefore Method considereth not only the disposition of the Argument or Subject, but likewise the Propositions ; not as to their truth or matter, but as to their limitation and manner. For herein Ramus merited better a great deal in reviving the good rules of Propositions, Καθόλου πρῶτον, κατὰ παντός, etc.[200] than he did in introducing the canker of Epitomes [201] ; and yet (as it is the condition of human things that, according to the ancient fables, *The most precious things have the most pernicious keepers*) ; it was so, that the attempt of the one made him fall upon the other [202]. For he had need be well conducted that should design to make Axioms *convertible*, if he make them not withal *circular*, and *non-promovent*, or *incurring into themselves* : but yet the intention was excellent.

The other considerations of Method concerning Propositions are chiefly touching the utmost propositions, which limit the dimensions of sciences ; for every knowledge may be fitly said, besides the profundity, (which is the truth and substance of it, that makes it solid), to have a longitude and a latitude ; accounting the latitude towards other sciences, and the longitude towards action ; that is, from the greatest generality to the most particular precept : the one giveth rule how far one knowledge ought to intermeddle within the province of another,

[196] *i.e.* a diversity of method to be used with judgment. (*Sequitur aliud methodi discrimen in tradendis scientiis cum judicio adhibendum*). This may perhaps be an error of the press or of the transcriber, some words having accidentally dropped out. It may however be merely an effect of hasty composition, of which there are many evidences in this part of the work.

[197] *i.e.* in accordance with received opinions. (*Opinionibus jam pridem imbibitis et receptis affinis*).

[198] This allusion to divine learning is omitted in the translation.

[199] In the translation he adds *Diæretica* and *Homerica*, and observes that he does not dwell upon these because they have been rightly invented and distributed.

[200] That they should be true generally, primarily, and essentially.—*R. L. E.*

[201] Instead of "the canker of Epitomes", the translation substitutes "his peculiar method and dichotomies".

[202] The attempt to amend propositions cast him upon those epitomes and shallows of knowledge, as they are called in the translation—*epitomas illas et scientiarum vada.*

which is the rule they call Καθαυτὸ [203]; the other giveth rule unto what degree of particularity a knowledge should descend: which latter I find passed over in silence, being in my judgment the more material; for certainly there must be somewhat left to practice [204]; but how much is worthy the inquiry. We see remote and superficial generalities do but offer knowledge to scorn of practical men; and are no more aiding to practice, than an Ortelius' universal map is to direct the way between London and York. The better sort of rules have been not unfitly compared to glasses of steel unpolished, where you may see the images of things, but first they must be filed: so the rules will help, if they be laboured and polished by practice. But how chrystalline they may be made at the first, and how far forth they may be polished aforehand, is the question; the inquiry whereof seemeth to me deficient.

De productione Axiomatum.

There hath been also laboured and put in practice a method, which is not a lawful method, but a method of imposture; which is to deliver knowledges in such manner, as men may speedily come to make a shew of learning who have it not: such was the travail of Raymundus Lullius, in making that art which bears his name, not unlike to some books of Typocosmy which have been made since; being nothing but a mass of words of all arts, to give men countenance that those which use the terms might be thought to understand the art; which collections are much like a fripper's or broker's shop, that hath ends of every thing, but nothing of worth.

¶ [205] Now we descend to that part which concerneth the Illustration of Tradition, comprehended in that science which we call Rhetoric, or Art of Eloquence; a science excellent, and excellently well laboured. For although in true value it is inferior to wisdom, as it is said by God to Moses, when he disabled himself for want of this faculty, *Aaron shall be thy speaker, and thou shalt be to him as God;* yet with people it is the more mighty: for so Salomon saith, *Sapiens corde appellabitur prudens, sed dulcis eloquio majora reperiet,* [the wise in heart shall be called prudent, but he that is sweet of speech shall compass greater things]; signifying that profoundness of wisdom will help a man to a name or admiration, but that it is eloquence that prevaileth in an active life. And as to the labouring of it, the emulation of Aristotle with the rhetoricians of his time, and the experience of Cicero, hath made them in their works of Rhetorics exceed themselves. Again, the excellency of examples of eloquence in the orations of Demosthenes and Cicero, added to the perfection of the precepts of eloquence, hath doubled the progression in this art; and therefore the deficiencies which I shall note will rather be in some collections which may as handmaids attend the art, than in the rules or use of the art itself.

Notwithstanding, to stir the earth a little about the roots of this science, as we have done of the rest: The duty and office of Rhetoric is *to apply Reason to Imagination* [206] for the better moving of the will. For we see Reason is disturbed in the administration thereof by three means; by Illaqueation or Sophism, which pertains to Logic; by Imagination or Impression [207], which pertains to Rhetoric; and by Passion or Affection, which pertains to Morality [208]. And as in negotiation with others men are wrought by cunning, by importunity, and by vehemency; so in this negotiation within ourselves men are undermined by Inconsequences, solicited and importuned by Impressions or Observations, and transported by Passions. Neither is the nature of man so unfortunately built, as that those powers and arts should have force to disturb reason, and not to

[203] This is omitted in the translation. "The rule they call καθαυτὸ," is the rule that propositions should be true *essentially*.

[204] For we must not fall into the error of Antoninus Pius (he adds in the translation) —to become *Cymini Sectores,* multiplying divisions to the last degree of minuteness.

[205] De Aug. vi. 3.

[206] Rhetoric being to the Imagination what Logic is to the Understanding.—*De Aug.*

[207] In the translation he substitutes *per præstigias verborum;* false impressions produced by words on the imagination.

[208] *i.e.* moral philosophy. (*Ethica.*)

establish and advance it: for the end of Logic is to teach a form of argument to secure reason, and not to entrap it; the end of Morality is to procure the affections to obey[209] reason, and not to invade it; the end of Rhetoric is to fill the imagination to second reason, and not to oppress it: for these abuses of arts come in but *ex obliquo*, for caution.

And therefore it was great injustice in Plato, though springing out of a just hatred of the rhetoricians of his time, to esteem of Rhetoric but as a voluptuary art, resembling it to cookery, that did mar wholesome meats, and help unwholesome by variety of sauces to the pleasure of the taste. For we see that speech is much more conversant in adorning that which is good than in colouring that which is evil; for there is no man but speaketh more honestly than he can do or think: and it was excellently noted by Thucydides in Cleon[210], that because he used to hold on the bad side in causes of estate, therefore he was ever inveighing against eloquence and good speech; knowing that no man can speak fair of courses sordid and base. And therefore as Plato said elegantly, *That virtue, if she could be seen, would move great love and affection*; so seeing that she cannot be shewed to the Sense by corporal shape, the next degree is to shew her to the Imagination in lively representation: for to shew her to Reason only in subtilty of argument, was a thing ever derided in Chrysippus and many of the Stoics; who thought to thrust virtue upon men by sharp disputations and conclusions, which have no sympathy with the will of man.

Again, if the affections in themselves were pliant and obedient to reason, it were true there should be no great use of persuasions and insinuations to the will, more than of naked proposition and proofs; but in regard of the continual mutinies and seditions of the affections,

Video meliora, proboque;
Deteriora sequor

[whereby they who not only see the better course, but approve it also, nevertheless follow the worse], reason would become captive and servile, if Eloquence of Persuasions did not practise and win the Imagination from the Affection's part, and contract a confederacy between the Reason and Imagination against the Affections. For the affections themselves carry ever an appetite to good, as reason doth; the difference is, that *the affection beholdeth merely the present; reason beholdeth the future and sum of time*; and therefore the present filling the imagination more, reason is commonly vanquished; but after that force of eloquence and persuasion hath made things future and remote appear as present, then upon the revolt of the imagination reason prevaileth.

We conclude therefore, that Rhetoric can be no more charged with the colouring of the worse part, than Logic with Sophistry, or Morality with Vice[211]. For we know the doctrines of contraries are the same, though the use be opposite. It appeareth also that Logic differeth from Rhetoric, not only as the fist from the palm, the one close, the other at large; but much more in this, that Logic handleth reason exact and in truth, and Rhetoric handleth it as it is planted in popular opinions and manners. And therefore Aristotle doth wisely place Rhetoric as between Logic on the one side and moral or civil knowledge on the

[209] In the translation he says *ut rationi militent*; to fight on the side of reason.

[210] In the translation he says, more correctly, "it was noted by Thucydides *as a censure passed upon Cleon*" (*tale quidpiam solitum fuisse objici Cleoni*); for the observation is made by Diodotus in his answer to Cleon's speech, iii. 42.

[211] The last clause is omitted in the translation. I do not know why. For according to Bacon's doctrine, expounded originally in the *Meditationes Sacræ* upon the text *non accipit stultus verba prudentiæ nisi ea dixeris quæ versantur in corde ejus*, and repeated here a little further on,—namely, that a man can neither protect his own virtue against evil arts, nor reclaim others from vice, without the help of the knowledge of evil,—Morality has a relation to Vice exactly corresponding with that of Logic to Sophistry; unless it be maintained that the Logician ought to be prepared to practise Sophistry as well as to detect and defeat it.

other, as participating of both: for the proofs and demonstrations of Logic are toward all men indifferent and the same; but the proofs and persuasions of Rhetoric ought to differ according to the auditors:

Orpheus in sylvis, inter delphinas Arion

[to be in the woods an Orpheus, among the dolphins an Arion]: which application, in perfection of idea, ought to extend so far, that if a man should speak of the same thing to several persons, he should speak to them all respectively and several ways: though this *politic part of eloquence in private speech* it is easy for the greatest orators to want, whilst by the observing their well-graced forms of speech they leese the volubility of application: and therefore it shall not be amiss to recommend this to better inquiry[212]; not being curious whether we place it here, or in that part which concerneth policy.

De prudentia Sermonis privati.

Now therefore will I descend to the deficiences, which (as I said) are but attendances[213]: and first, I do not find the wisdom and diligence of Aristotle well pursued, who began to make a collection of *the popular signs and colours of good and evil, both simple and comparative*, which are as the Sophisms of Rhetoric (as I touched before). For example:

Colores boni et mali, simplicis et comparati.

SOPHISMA.

Quod laudatur, bonum: quod vituperatur, malum.

REDARGUTIO.

Laudat venales qui vult extrudere merces.
Malum est, malum est, inquit emptor: sed cum recesserit, tum gloriabitur[214].

The defects in the labour of Aristotle are three: one, that there be but a few of many; another, that their Elenches are not annexed[215]: and the third, that he conceived but a part of the use of them: for their use is not only in probation, but much more in impression. For many forms are equal in signification which are differing in impression; as the difference is great in the piercing of that which is sharp and that which is flat, though the strength of the percussion be the same; for there is no man but will be a little more raised by hearing it said, *your enemies will be glad of this*:

Hoc Ithacus velit, et magno mercentur Atridæ:

than by hearing it said only, *This is evil for you*.

Secondly, I do resume also that which I mentioned before touching Provision or Preparatory store for the furniture of speech and readiness of invention; which appeareth to be of two sorts; the one in resemblance to a shop of pieces unmade up, the other to a shop of things ready made up; both to be applied to that which is frequent and most in request: the former of these I will call *Antitheta*, and the latter *Formulæ*.

Antitheta are Theses argued *pro et contra*; wherein men may be more large

212 Being a thing which the more it is considered the more it will be valued (*rem certe quam quo attentius quis recogitet, eo pluris faciet*).

213 and which are all of the nature of collections for store (*pertinent omnia ad promptuariam*).

214 SOPHISM.—That which people praise is good, that which they blame is bad.
ELENCHE.—He praises his wares who wants to get them off his hands.
It is naught, it is naught, sayth the buyer; but when he is gone he will vaunt.

215 In the translation, instead of the single example given above, he inserts a collection of twelve, by way of specimen; each having the elenche annexed and completely explained. This collection is a translation, with corrections and additions, of the English tract entitled "Colours of Good and Evil," which was printed along with the Essays in 1597.

Antitheta Rerum.

and laborious: but (in such as are able to do it) to avoid prolixity of entry, I wish the seeds of the several arguments to be cast up into some brief and acute sentences; not to be cited, but to be as skeins or bottoms of thread, to be unwinded at large when they come to be used; supplying authorities and examples by reference.

PRO VERBIS LEGIS.

Non est interpretatio, sed divinatio, quæ recedit a literâ.
Cum receditur a literâ, judex transit in legislatorem.

PRO SENTENTIA LEGIS.

Ex omnibus verbis est eliciendus sensus qui interpretatur singula [216].

[217] *Formulæ* are but decent and apt passages or conveyances of speech which may serve indifferently for differing subjects; as of preface, conclusion, digression, transition, excusation, &c. For as in buildings there is great pleasure and use in the well-casting of the stair-cases, entries, doors, windows, and the like; so in speech the conveyances and passages are of special ornament and effect.

A CONCLUSION IN A DELIBERATIVE.

So may we redeem the faults passed, and prevent the inconveniences future.

¶ [218] There remain two appendices touching the tradition of knowledge, the one Critical, the other Pedantical.[219] For all knowledge is either delivered by teachers, or attained by men's proper endeavours: and therefore as the principal part of tradition of knowledge concerneth chiefly writing [220] of books, so the relative part thereof concerneth reading of books. Whereunto appertain incidently these considerations. The first is concerning the true correction and edition of authors; wherein nevertheless rash diligence hath done great prejudice. For these critics have often presumed that that which they understand not is false set down: as the Priest that where he found it written of St. Paul, *Demissus est per sportam* [he was let down in a basket], mended his book, and made it *Demissus est per portam* [he was let out by the gate]; because *sporta* was an hard word, and out of his reading [221]; and surely their errors, though

[216] For the Words of the Law.—Interpretation which departs from the letter, is not interpretation but divination.

When the letter is departed from the Judge becomes the Lawgiver.

For the Intention of the Law.—The sense according to which each word is to be interpreted must be collected from all the words together.

Of these *antitheta* a large collection will be found in the *De Augmentis*, set forth by way of specimen in the manner here recommended.

[217] Of these *formulæ*—or *formulæ minores* as he afterwards called them—three other examples are given in the *De Augmentis*, all from Cicero. Bacon's own speeches and narrative writings would supply many very good ones.

[218] De Aug. vi. 4.   [219] *Pædagogica*, in the translation.

[220] *in writing*, in the original; and also in the editions 1629 and 1633. The translation has *in lectione librorum consistit*.

[221] For this illustration, which as reflecting upon a Priest might have been offensive at Rome, another is substituted in the *De Augmentis*, which is "not so palpable and ridiculous." A striking instance of the same kind occurs in two recent editions of this very work. In an edition of the *Advancement of Learning* published by J. W. Parker in 1852, *Orosius* is substituted for *Osor us* in the passage (p. 283), "Then grew the flowing and watery vein of Osorius, the Portugal Bishop, to be in price"; with the following note: "All the editions have *Osorius*, which however must be a mere misprint. He was not a Portuguese, but a Spaniard, born at Tarragona, nor indeed ever a bishop. He was sent by St. Augustine on a mission to Jerusalem, and is supposed to have died in Africa in the earlier part of the fifth century." In the following year Mr. H. Bohn published a translation of the *De Augmentis*, which is little more than a reprint of Shaw's transla-

they be not so palpable and ridiculous, are yet of the same kind. And therefore as it hath been wisely noted, the most corrected copies are commonly the least correct.

The second is concerning the exposition and explication of authors, which resteth in annotations and commentaries; wherein it is over usual to blanch the obscure places, and discourse upon the plain.

The third is concerning the times, which in many cases give great light to true interpretations [222].

The fourth is concerning some brief censure and judgment of the authors; that men thereby may make some election unto themselves what books to read.

And the fifth is concerning the syntax and disposition of studies; that men may know in what order or pursuit to read [223].

For Pedantical knowledge, it containeth that difference of Tradition which is proper for youth; whereunto appertain divers considerations of great fruit.

As first, the timing and seasoning of knowledges; as with what to initiate them, and from what for a time to refrain them.

Secondly, the consideration where to begin with the easiest and so proceed to the more difficult; and in what courses [224] to press the more difficult and then to turn them to the more easy: for it is one method to practise swimming with bladders, and another to practise dancing with heavy shoes.

A third is the application of learning according unto the propriety of the wits; for there is no defect in the faculties intellectual but seemeth to have a proper cure contained in some studies: as for example, if a child be bird-witted, that is, hath not the faculty of attention, the Mathematics giveth a remedy thereunto; for in them, if the wit be caught away but a moment, one is new to begin. And as sciences have a propriety towards faculties for cure and help, so faculties or powers have a sympathy towards sciences for excellency or speedy profiting; and therefore it is an inquiry of great wisdom, what kinds of wits and natures are most apt and proper for what sciences.

Fourthly, the ordering of exercises is matter of great consequence to hurt or help; for as is well observed by Cicero, men in exercising their faculties, if they be not well advised, do exercise their faults and get ill habits as well as good; so as there is a great judgment to be had in the continuance and intermission of exercises. It were too long to particularise a number of other considerations of this nature, things but of mean appearance, but of singular efficacy. For as the wronging or cherishing of seeds or young plants is that that is most important to their thriving; and as it was noted that the first six kings being in truth as tutors of the state of Rome in the infancy thereof, was the principal cause of the immense greatness of that state which followed: so the culture and manurance of minds in youth hath such a forcible (though unseen) operation, as hardly any length of time or contention of labour can countervail it afterwards. And it is not amiss to observe also how small and mean faculties gotten

tion, revised and edited by Mr. Joseph Devey. In this edition *Orosius* is silently substituted for *Osorius* in the same passage, with this note: " Neither a Portuguese, nor a bishop, but a Spanish monk born at Tarragona, and sent by St. Augustine on a mission to Jerusalem in the commencement of the fifth century ". The mistake is the more remarkable because the passage in Bacon refers obviously and unmistakably to the period of the Reformation.

[222] This point is omitted in the translation, except in so far as it is involved in an observation which is added under the next head—viz. that editors besides giving " some brief censure and judgment of their authors " should compare them with other writers on the same subjects. But I am inclined to suspect that the omission was accidental for the truth is, that without constant reference to the times and circumstances in which he wrote hardly any author can be properly understood.

[223] This point is also omitted in the translation; perhaps as included in the " censure and judgment "; which (he adds) is as it were the Critic's chair; an office ennobled in his time by some great men, *majores certe nostro judicio quam pro modulo criticorum*,—men above the stature of critics.

[224] So all the editions: probably a misprint for *cases*.

by education, yet when they fall unto great men or great matters, do work great and important effects; whereof we see a notable example in Tacitus of two stage-players, Percennius and Vibulenus, who by their faculty of playing put the Pannonian armies into an extreme tumult and combustion. For there arising a mutiny amongst them upon the death of Augustus Cæsar, Blæsus the lieutenant had committed some of the mutiners; which were suddenly rescued; whereupon Vibulenus got to be heard speak, which he did in this manner:—*These poor innocent wretches, appointed to cruel death, you have restored to behold the light. But who shall restore my brother to me, or life unto my brother? that was sent hither in message from the legions of Germany to treat of the common cause, and he hath murdered him this last night by some of his fencers and ruffians, that he hath about him for his executioners upon soldiers. Answer, Blæsus, what is done with his body? The mortalest enemies do not deny burial. When I have performed my last duties to the corpse with kisses, with tears, command me to be slain besides him; so that these my fellows, for our good meaning and our true hearts to the legions, may have leave to bury us.*[225] With which speech he put the army into an infinite fury and uproar; whereas truth was he had no brother, neither was there any such matter, but he played it merely as if he had been upon the stage.

[225] The last clause does not give the exact meaning of the original, from which it may seem that Bacon was reporting the speech from memory; unless it be that a line has accidentally dropped out. By inserting after "fellows" the words "seeing us put to death for no crime, but only for", &c. the sense would be represented with sufficient accuracy.

In the translation, this passage relating to "Pedantical knowledge",—that is the knowledge which concerns the instruction of youth—is considerably enlarged, and a distinct opinion is expressed upon many of the points which are here only noticed as worthy of inquiry. He begins by recommending the schools of the Jesuits as the best model,—an opinion which he had already intimated in the first book of the *Advancement.* He approves of a collegiate education both for boys and young men, as distinguished from a private education under masters. He wishes compendiums to be avoided, and the system which, aiming at precocity, produces overconfidence and a mere show of proficiency. He would encourage independence of mind, and if any one shows a taste for studies which lie out of the regular course, and can find time to pursue them, he would by no means have him restrained. Of the two methods mentioned in the text, one beginning with the easiest tasks, the other with the most difficult, he recommends a judicious intermixture, as best for the advancement of the powers both of mind and body. With regard to the "application of learning according unto the propriety of the wits," he observes (besides its use as a corrective of mental defects) that masters ought to attend to it for the guidance of the parents in choosing their sons' course of life; and also because a man will advance so much faster in studies for which he has a natural aptitude than in any others. With regard to the "ordering of exercises" he recommends the system of intermissions. (*Itaque tutius est intermittere exercitia et subinde repetere, quam assidue continuare et urgere*). Lastly he would decidedly have the art of acting (*actio theatralis*) made a part of the education of youth. The Jesuits, he says, do not despise it; and he thinks they are right; for though it be of ill repute as a profession (*si sit professoria, infamis est*) yet as a part of *discipline* it is of excellent use. It strengthens the memory, it regulates the tone and effect of the voice and pronunciation, it teaches a decent carriage of the countenance and gesture, it begets no small degree of confidence, and accustoms young men to bear being looked at. In Bacon's time, when masques acted by young gentlemen of the Universities or Inns of Court were the favourite entertainment of princes, these things were probably better attended to than they are now—and he could have pointed no doubt to many living examples in illustration of his remark. The examples which modern experience supplies are all of the negative kind, but not therefore the less significant. The art of speaking, of recitation, even of reading aloud, is not now taught at all; and the consequence is that even among men otherwise accomplished not many will be found who can either speak a speech of their own, or recite the speech of another, or read a book aloud, so as to be listened to with pleasure in a mixed company for a quarter of an hour together.

But to return: we are now come to a period of Rational Knowledges; wherein if I have made the divisions other than those that are received, yet would I not be thought to disallow all those divisions which I do not use. For there is a double necessity imposed upon me of altering the divisions. The one, because it differeth in end and purpose, to sort together those things which are next in nature, and those things which are next in use. For if a secretary of state should sort his papers, it is like in his study or general cabinet he would sort together things of a nature, as treaties, instructions, etc. but in his boxes or particular cabinet he would sort together those that he were like to use together, though of several natures; so in this general cabinet of knowledge it was necessary for me to follow the divisions of the nature of things; whereas if myself had been to handle any particular knowledge, I would have respected the divisions fittest for use. The other, because the bringing in of the deficiences did by consequence alter the partitions of the rest: for let the knowledge extant (for demonstration sake) be fifteen; let the knowledge with the deficiences be twenty; the parts of fifteen are not the parts of twenty; for the parts of fifteen are three and five; the parts of twenty are two, four, five, and ten. So as these things are without contradiction, and could not otherwise be.

¶ [226] We proceed now to that knowledge which considereth of the Appetite [227] and Will of Man; whereof Salomon saith, *Ante omnia, fili, custodi cor tuum; nam inde procedunt actiones vitæ* [keep thy heart with all diligence, for thereout come the actions of thy life]. In the handling of this science, those which have written seem to me to have done as if a man that professeth to teach to write did only exhibit fair copies of alphabets and letters joined, without giving any precepts or directions for the carriage of the hand and framing of the letters. So have they made good and fair exemplars and copies, carrying the draughts and portraitures of Good, Virtue, Duty, Felicity; propounding them well described as the true objects and scopes of man's will and desires; but how to attain these excellent marks, and how to frame and subdue the will of man to become true and conformable to these pursuits, they pass it over altogether, or slightly and unprofitably. For it is not the disputing *that moral virtues are in the mind of man by habit and not by nature*, or the distinguishing *that generous spirits are won by doctrines and persuasions, and the vulgar sort by reward and punishment* [228], and the like scattered glances and touches, that can excuse the absence of this part.

The reason of this omission I suppose to be that hidden rock whereupon both this and many other barks of knowledge have been cast away; which is, that men have despised to be conversant in ordinary and common matters: the judicious direction whereof nevertheless is the wisest doctrine (for life consisteth not in novelties or subtilities); but contrariwise they have compounded sciences chiefly of a certain resplendent or lustrous mass of matter, chosen to give glory either to the subtility of disputations or to the eloquence of discourses. But Seneca giveth an excellent check to eloquence; *Nocet illis eloquentia, quibus non rerum cupiditatem facit, sed sui* [eloquence does mischief when it draws men's attention away from the matter to fix it on itself]. Doctrines should be such as should make men in love with the lesson, and not with the teacher; being directed to the auditor's benefit, and not to the author's commendation: and therefore those are of the right kind which may be concluded as Demosthenes concludes his counsel, *Quæ si feceritis, non oratorem duntaxat in præsentia laudabitis, sed vosmetipsos etiam non ita multo post statu rerum vestrarum meliore* [if you follow this advice you will do a grace to yourselves no less than to the speaker,—to him by your vote to-day, to yourselves by the improvement which you will presently find in your affairs].

Neither needed men of so excellent parts to have despaired of a fortune which

[226] De Aug. vii. 1.

[227] In the translation the word *Appetite* is omitted; and the Will is described as governed by right reason, seduced by apparent good, having the passions for spurs, the organs and voluntary motions for ministers.

[228] Or the giving it in precept (he adds in the translation) that if you would rectify the mind you must bend it like a wand in the direction contrary to its inclination.

the poet Virgil promised himself, (and indeed obtained,) who got as much glory of eloquence, wit, and learning in the expressing of the observations of husbandry, as of the heroical acts of Æneas :—

> Nec sum animi dubius, verbis ea vincere magnum
> Quam sit, et angustis his addere rebus honorem.
> [How hard the task, alas! full well I know,
> With charm of words to grace a theme so low.]

And surely if the purpose be in good earnest not to write at leisure that which men may read at leisure, but really to instruct and suborn action and active life, these Georgics of the mind, concerning the husbandry and tillage thereof, are no less worthy than the heroical descriptions of Virtue, Duty, and Felicity. Wherefore the main and primitive division of moral knowledge seemeth to be into the Exemplar or Platform of Good, and the Regiment or Culture of the Mind ; the one describing the nature of good, the other prescribing rules how to subdue, apply, and accommodate the will of man thereunto.

The doctrine touching the Platform or Nature of Good considereth it either Simple or Compared : either the kinds of good, or the degrees of good : in the later whereof those infinite disputations which were touching the supreme degree thereof, which they term felicity, beatitude, or the highest good, the doctrines concerning which were as the heathen divinity, are by the Christian faith discharged. And as Aristotle saith, *That young men may be happy, but not otherwise but by hope ;* so we must all acknowledge our minority, and embrace the felicity which is by hope of the future world.

Freed therefore and delivered from this doctrine of the philosophers' heaven, whereby they feigned an higher elevation of man's nature than was, (for we see in what an height of style Seneca writeth, *Vere magnum, habere fragilitatem hominis, securitatem Dei* [it is true greatness to have in one the frailty of a man and the security of a God], we may with more sobriety and truth receive the rest of their inquiries and labours. Wherein for the Nature of Good Positive or Simple, they have set it down excellently, in describing the forms of Virtue and Duty, with their situations and postures, in distributing them into their kinds, parts, provinces, actions, and administrations, and the like : nay farther, they have commended them to man's nature and spirit with great quickness of argument and beauty of persuasions ; yea, and fortified and intrenched them (as much as discourse can do) against corrupt and popular opinions. Again, for the Degrees and Comparative Nature of Good, they have also excellently handled it in their triplicity of Good, in the comparisons between a contemplative and an active life, in the distinction between virtue with reluctation and virtue secured, in their encounters between honesty and profit, in their balancing of virtue with virtue, and the like ; so as this part deserveth to be reported for excellently laboured [229].

Notwithstanding, if before they had comen to the popular and received notions of virtue and vice, pleasure and pain, and the rest, they had stayed a little longer upon the inquiry concerning the roots of good and evil, and the strings of these roots, they had given, in my opinion, a great light to that which followed ; and specially if they had consulted with nature, they had made their doctrines less prolix and more profound ; which being by them in part omitted and in part handled with much confusion, we will endeavour to resume and open in a more clear manner.

There is formed in every thing a double nature of good : the one, as every thing is a total or substantive in itself ; the other, as it is a part or member of a greater body ; whereof the later is in degree the greater and the worthier, because it tendeth to the conservation of a more general form. Therefore we see the iron in particular sympathy moveth to the loadstone ; but yet if it exceed a certain quantity, it forsaketh the affection to the loadstone, and like a good patriot moveth to the earth, which is the region and country of massy bodies ; so may we go forward, and see that water and massy bodies move to the centre of the earth ;

[229] Well by the ancient philosophers, but still better (according to the translation) by the divines in their discussions of moral duties and virtues, cases of conscience, sins, etc.

but rather than to suffer a divulsion in the continuance of nature, they will move upwards from the centre of the earth, forsaking their duty to the earth in regard of their duty to the world. This double nature of good, and the comparative thereof, is much more engraven upon man, if he degenerate not; unto whom the conservation of duty to the public ought to be much more precious than the conservation of life and being: according to that memorable speech of Pompeius Magnus, when being in commission of purveyance for a famine at Rome, and being dissuaded with great vehemency and instance by his friends about him that he should not hazard himself to sea in an extremity of weather, he said only to them, *Necesse est ut eam, non ut vivam* [it is needful that I go, not that I live]. But it may be truly affirmed that there was never any philosophy, religion, or other discipline, which did so plainly and highly exalt the good which is communicative, and depress the good which is private and particular, as the Holy Faith; well declaring, that it was the same God that gave the Christian law to men, who gave those laws of nature to inanimate creatures that we spake of before; for we read that the elected saints of God have wished themselves anathematized and razed out of the book of life, in an ecstasy of charity and infinite feeling of communion.

This being set down and strongly planted, doth judge and determine most of the controversies wherein Moral Philosophy is conversant. For first it decideth the question touching the preferment of the contemplative or active life, and decideth it against Aristotle. For all the reasons which he bringeth for the contemplative are private, and respecting the pleasure and dignity of a man's self, (in which respects no question the contemplative life hath the pre-eminence): not much unlike to that comparison which Pythagoras made for the gracing and magnifying of philosophy and contemplation; who being asked what he was, answered, *That if Hiero were ever at the Olympian games, he knew the manner, that some came to try their fortune for the prizes, and some came as merchants to utter their commodities, and some came to make good cheer and meet their friends, and some to look on; and that he was one of them that came to look on.* But men must know, that in this theatre of man's life it is reserved only for God and Angels to be lookers on. Neither could the like question ever have been received in the church, notwithstanding their *Pretiosa in oculis Domini mors sanctorum ejus* [precious in the sight of the Lord is the death of his saints], by which place they would exalt their civil death and regular professions, but upon this defence, that the monastical life is not simple [230] contemplative, but performeth the duty either of incessant prayers and supplications, which hath been truly esteemed as an office in the church, or else of writing or taking [231] instructions for writing concerning the law of God, as Moses did when he abode so long in the mount. And so we see Henoch the seventh from Adam, who was the first Contemplative and walked with God, yet did also endow the church with prophecy, which St. Jude citeth. But for contemplation which should be finished in itself without casting beams upon society, assuredly divinity knoweth it not.

It decideth also the controversies between Zeno and Socrates and their schools and successions on the one side, who placed felicity in virtue simply or attended; the actions and exercises whereof do chiefly embrace and concern society; and on the other side [232], the Cyrenaics and Epicureans, who placed it in pleasure, and made virtue (as it is used in some comedies of errors, wherein the mistress and the maid change habits), to be but as a servant, without which pleasure cannot be served and attended; and the reformed school of the Epicureans, which placed it in serenity of mind and freedom from perturbation; as if they would have deposed Jupiter again, and restored Saturn and the first age, when there was no

[230] Edd. 1629 and 1633 have *simply*.

[231] So edd. 1629 and 1633. The original has *in taking*. In the translation the words "taking instructions for writing" are omitted; as applicable, I suppose, to the case of Moses only, not of the Church; and *multo in otio* substituted.

[232] *Et reliquas complures sectas et scholas, ex altera parte: veluti*, etc. All the opinions which are about to be cited belong to "the other side"—*i.e.* the side opposed to that of Zeno and Socrates; a point which from the careless composition of the English is not immediately clear.

summer nor winter, spring nor autumn, but all after one air and season ; and Herillus [233], which placed felicity in extinguishment of the disputes of the mind, making no fixed nature of good and evil, esteeming things according to the clearness of the desires, or the reluctation [234] ; which opinion was revived in the heresy of the Anabaptists, measuring things according to the motions of the spirit, and the constancy or wavering of belief : all which are manifest to tend to private repose and contentment, and not to point of society.

It censureth also the philosophy of Epictetus, which presupposeth that felicity must be placed in those things which are in our power, lest we be liable to fortune and disturbance : as if it were not a thing much more happy to fail in good and virtuous ends for the public, than to obtain all that we can wish to ourselves in our proper fortune ; as Consalvo said to his soldiers, shewing them Naples, and protesting he had rather die one foot forwards than to have his life secured for long by one foot of retreat ; whereunto the wisdom of that heavenly leader hath signed, who hath affirmed that *a good conscience is a continual feast :* shewing plainly that the conscience of good intentions, howsoever succeeding, is a more continual joy to nature than all the provision which can be made for security and repose.

It censureth likewise that abuse of philosophy which grew general about the time of Epictetus, in converting it into an occupation or profession ; as if the purpose had been, not to resist and extinguish perturbations, but to fly and avoid the causes of them, and to shape a particular kind and course of life to that end ; introducing such an health of mind, as was that health of body of which Aristotle speaketh of Herodicus, who did nothing all his life long but intend his health : whereas if men refer themselves to duties of society, as that health of body is best which is ablest to endure all alterations and extremites, so likewise that health of mind is most proper [235] which can go through the greatest temptations and perturbations. So as Diogenes' opinion is to be accepted, who commended not them which abstained, but them which sustained, and could refrain their mind *in præcipitio*, and could give unto the mind (as is used in horsemanship) the shortest stop or turn.

Lastly, it censureth the tenderness and want of application [236] in some of the most ancient and reverend philosophers and philosophical men, that did retire too easily from civil business, for avoiding of indignities and perturbations ; whereas the resolution of men truly moral ought to be such as the same Consalvo said the honour of a soldier should be, *e telâ crassiore* [of a stouter web], and not so fine that every thing should catch in it and endanger it.

¶ [237] To resume Private or Particular Good, it falleth into the division of Good Active and Passive : for this difference of Good (not unlike to that which amongst the Romans was expressed in the familiar or household terms of Promus and Condus) is formed also in all things ; and is best disclosed in the two several appetites in creatures, the one to preserve or continue themselves, and the other to dilate or multiply themselves ; whereof the later seemeth to be the worthier. For in nature, the heavens, which are the more worthy, are the agent ; and the earth, which is the less worthy, is the patient. In the pleasures of living creatures, that of generation is greater than that of food. In divine doctrine, *Beatius est dare quam accipere* [it is more blessed to give than to receive]. And in life, there is no man's spirit so soft, but esteemeth the effecting of somewhat that he hath fixed in his desire more than sensuality. Which priority of the Active Good is much upheld by the consideration of our estate to be mortal and exposed to fortune ;

[233] The translation has "and lastly that exploded school of Pyrrho and Herillus".

[234] That is, esteeming those actions good which are attended with clearness and composure of mind, those bad which proceed with dislike and reluctation—(*actiones pro bonis aut malis habentes, prout ex animo, motu puro et irrefracto, aut contra cum aversatione et reluctatione, prodirent*).

[235] *i.e.* that mind is to be considered truly and properly healthy—(*animus ille demum vere et propria sanus et validus censendus est*).

[236] meaning what we should now rather call want of compliance or accommodation—(*ineptitudinem ad morigerandum*).

[237] De Aug. vii. 2.