for if we might have a perpetuity and certainty in our pleasures, the *state* [238] of them would advance their price; but when we see it is but *Magni æstimamus mori tardius*· [we think it a great matter to be a little longer in dying], and *Ne glorieris de crastino, nescis partum diei* [boast not thyself of to-morrow, thou knowest not what the day may bring forth], it maketh us to desire to have somewhat secured and exempted from time; which are only our deeds and works; as it is said *Opera eorum sequuntur eos* [their works follow them]. The pre-eminence likewise of this Active Good is upheld by the affection which is natural in man towards variety and proceeding; which in the pleasures of the sense (which is the principal part of Passive Good) can have no great latitude: *Cogita quamdiu eadem feceris ; cibus, somnus, ludus ; per hunc circulum curritur ; mori velle non tantum fortis, aut miser, aut prudens, sed etiam fastidiosus potest* [if you consider, says Seneca, how often you do the same thing over and over; food, sleep, exercise, and then food, sleep, exercise again, and so round and round; you will think that there needs neither fortitude nor misery nor wisdom to reconcile a man to death; one might wish to die for mere weariness of being alive]. But in enterprises, pursuits, and purposes of life, there is much variety; whereof men are sensible with pleasure in their inceptions, progressions, recoils, reintegrations, approaches, and attainings to their ends: so as it was well said, *Vita sine proposito languida et vaga est* [life without an object to pursue is a languid and tiresome thing]. Neither hath this Active Good any [239] identity with the good of society, though in some case it hath an incidence into it: for although it do many times bring forth acts of beneficence, yet it is with a respect private to a man's own power, glory, amplification, continuance; as appeareth plainly when it findeth a contrary subject. For that gigantine state of mind which possesseth the troublers of the world, such as was Lucius Sylla, and infinite other in smaller model, who would have all men happy or unhappy as they were their friends or enemies, and would give form to the world according to their own humours, (which is the true Theomachy), pretendeth and aspireth to active good [240], though it recedeth furthest from good of society, which we have determined to be the greater.

To resume Passive Good, it receiveth a subdivision of Conservative and Perfective. For let us take a brief review of that which we have said: we have spoken first of the Good of Society, the intention thereof embraceth the form of Human Nature, whereof we are members and portions, and not our own proper and individual form; we have spoken of Active Good, and supposed it as a part of Private and Particular Good; and rightly [241]; for there is impressed upon all things a triple desire or appetite proceeding from love to themselves; one of preserving and continuing their form; another of advancing and perfecting their form; and a third of multiplying and extending their form upon other things; whereof the multiplying or signature of it upon other things is that which we handled by the name of Active Good. So as there remaineth the conserving of it, and perfecting or raising of it; which later is the highest degree of Passive Good. For to preserve in state is the less, to preserve with advancement is the greater. So in man,

> Igneus est ollis vigor, et cœlestis origo [242]
> [The living fire that glows those seeds within
> Remembers its celestial origin].

His approach or assumption to divine or angelical nature is the perfection of his form; the error or false imitation of which good is that which is the tempest of human life; while man, upon the instinct of an advancement formal and essen-

[238] *i.e.* the stability—(*securitas et mora*).

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

[240] *i.e.* apparent good of the individual—(*bonum activum individuale saltem apparens*).

[241] This passage, from *for let us take* etc. to *rightly*, is omitted in the translation; and the argument proceeds more clearly without it.

[242] The connexion of this with the preceding sentence is made clearer in the translation by the remark that there are found throughout the universe certain nobler natures which inferior natures recognise as their origin and towards which they aspire.

tial, is carried to seek an advancement local. For as those which are sick, and find no remedy, do tumble up and down and change place, as if by a remove local they could obtain a remove internal; so is it with men in ambition, when failing of the mean to exalt their nature, they are in a perpetual estuation to exalt their place. So then Passive Good is, as was said, either Conservative or Perfective.

To resume the good of Conservation or Comfort, which consisteth *in the fruition of that which is agreeable to our natures;* it seemeth to be the most pure and natural of pleasures, but yet the softest and the lowest. And this also receiveth a difference, which hath neither been well judged of nor well enquired. For the good of fruition or contentment is placed either in the sincereness of the fruition, or in the quickness and vigour of it; the one superinduced by the equality, the other by vicissitude; the one having less mixture of evil, the other more impression of good. Whether of these is the greater good, is a question controverted; but whether man's nature may not be capable of both, is a question not enquired.

The former question being debated between Socrates and a Sophist, Socrates placing felicity in an equal and constant peace of mind, and the Sophist in much desiring and much enjoying, they fell from argument to ill words: the Sophist saying that Socrates' felicity was the felicity of a block or stone; and Socrates saying that the Sophist's felicity was the felicity of one that had the itch, who did nothing but itch and scratch. And both these opinions do not want their supports. For the opinion of Socrates is much upheld by the general consent even of the Epicures themselves, that virtue beareth a great part in felicity; and if so, certain it is that virtue hath more use in clearing perturbations than in compassing desires. The Sophist's opinion is much favoured by the assertion we last spake of, that good of advancement is greater than good of simple preservation; because every obtaining a desire hath a shew of advancement [243], as motion though in a circle hath a shew of progression.

But the second question, decided the true way, maketh the former superfluous. For can it be doubted but that there are some who take more pleasure in enjoying pleasures than some other, and yet nevertheless are less troubled with the loss or leaving of them? so as this same *Non uti ut non appetas, non appetere ut non metuas, sunt animi pusilli et diffidentis* [to abstain from the use of a thing that you may not feel a want of it; to shun the want that you may not fear the loss of it; are the precautions of pusillanimity and cowardice]. [244] And it seemeth to me, that most of the doctrines of the philosophers are more fearful and cautionary than the nature of things requireth. So have they increased the fear of death in offering to cure it. For when they would have a man's whole life to be but a discipline or preparation to die, they must needs make men think that it is a terrible enemy against whom there is no end of preparing. Better saith the poet:

> Qui finem vitæ extremum inter munera ponat
> Naturæ

[the end of life is to be counted among the boons of nature]. So have they sought to make men's minds too uniform and harmonical, by not breaking them sufficiently to contrary motions: the reason whereof I suppose to be, because they themselves were men dedicated to a private, free, and unapplied course of life. For as we see, upon the lute or like instrument, a *ground*, though it be sweet and have shew of many changes, yet breaketh not the hand to such strange and hard stops and passages as a *set song* or *voluntary;* much after the same manner was the diversity between a philosophical and a civil life [245]. And therefore men are to imitate the wisdom of jewellers; who, if there be a grain or a cloud or an ice

[243] *i.e.* towards the perfection of nature; only a *show* of advancement, however, not necessarily a real one—(*quia rerum cupitarum adeptiones naturam videantur sensim perficere; quod licet vere non faciant, tamen*, etc.).

[244] Compare Shakespeare's sonnet—

> I cannot chuse
> But weep to have that which I fear to lose.

[245] This illustration is omitted in the translation.

which may be ground forth without taking too much of the stone, they help it; but if it should lessen or abate the stone too much, they will not meddle with it: so ought men so to procure serenity as they destroy not magnanimity.

Having therefore deduced the Good of Man which is Private and Particular as far as seemeth fit, we will now return to that good of man which respecteth and beholdeth society, which we may term Duty; because the term of Duty is more proper to a mind well framed and disposed towards others, as the term of Virtue is applied to a mind well formed and composed in itself; though neither can a man understand Virtue without some relation to society, nor Duty without an inward disposition. This part may seem at first to pertain to science civil and politic; but not if it be well observed. For it concerneth the regiment and government of every man over himself, and not over others. And as in architecture the direction of framing the posts, beams, and other parts of building, is not the same with the manner of joining them and erecting the building; and in mechanicals, the direction how to frame an instrument or engine, is not the same with the manner of setting it on work and employing it; and yet nevertheless in expressing of the one you incidently express the aptness towards the other; so the doctrine of conjugation of men in society differeth from that of their conformity thereunto [246].

This part of Duty is subdivided into two parts; the common duty of every man as a man or member of a state, the other, the respective or special duty of every man, in his profession, vocation, and place. The first of these is extant and well laboured, as hath been said. The second likewise I may report rather dispersed than deficient; which manner of dispersed writing in this kind of argument I acknowledge to be best. For who can take upon him to write of the proper duty, virtue, challenge, and right of every several vocation, profession and place? For although sometimes a looker on may see more than a gamester, and there be a proverb more arrogant than sound, *That the vale best discovereth the hill*; yet there is small doubt but that men can write best and most really and materially in their own professions; and that the writing of speculative men of active matter for the most part doth seem to men of experience, as Phormio's argument of the wars seemed to Hannibal, to be but dreams and dotage. Only there is one vice which accompanieth them that write in their own professions, that they magnify them in excess. But generally it were to be wished (as that which would make learning indeed solid and fruitful) that active men would or could become writers.

In which kind I cannot but mention, *honoris causa*, your Majesty's excellent book touching the duty of a king: a work richly compounded of divinity, morality, and policy, with great aspersion of all other arts; and being in mine opinion one of the most sound and healthful writings that I have read; not distempered in the heat of invention, nor in the coldness of negligence; not sick of dizziness [247], as those are who leese themselves in their order; nor of convulsions [248], as those which cramp in matters impertinent; not savouring of perfumes and paintings, as those who seek to please the reader more than nature [249] beareth; and chiefly well disposed in the spirits thereof, being agreeable to truth and apt for action; and far removed from that natural infirmity, whereunto I noted those that write in their own professions to be subject, which is, that they exalt it above measure. For your Majesty hath truly described, not a king of Assyria or Persia

[246] *i.e.* of the conformation of men to the business of society—(*quæ eos reddit ad hujusmodi societatis commoda conformes et bene affectos*).

[247] *Dusinesse* in the original. *Businesse* in edd. 1629 and 1623. *Vertigine* in De Aug.

[248] The words "convulsion" and "cramp" seem to describe a forced and abrupt style; an idea not implied in the words of the translation, which may be retranslated thus: "not distracted in digressions, as those which wind about to take in matters impertinent"—(*ut illa quæ nihil ad rhombum sunt expatiatione aliqua flexuosa complectatur*).

[249] *i.e.* the nature of the argument.—(*qui lectorum potius delectationi quam argumenti naturæ inserviunt*).

in their extern glory, but a Moses or a David, pastors of their people. Neither can I ever leese out of my remembrance what I heard your Majesty in the same sacred spirit of government deliver in a great cause of judicature, which was, *That Kings ruled by their laws as God did by the laws of nature, and ought as rarely to put in use their supreme prerogative as God doth his power of working miracles.* And yet notwithstanding, in your book of a free monarchy, you do well give men to understand, that you know the plenitude of the power and right of a King, as well as the circle of his office and duty. Thus have I presumed to allege this excellent writing of your Majesty, as a prime or eminent example of tractates concerning special and respected duties; wherein I should have said as much, if it had been written a thousand years since. Neither am I moved with certain courtly decencies, which esteem it flattery to praise in presence. No, it is flattery to praise in absence; that is, when either the virtue is absent, or the occasion is absent; and so the praise is not natural, but forced, either in truth or in time. But let Cicero be read in his oration *pro Marcello*, which is nothing but an excellent table of Cæsar's virtue, and made to his face; besides the example of many other excellent persons, wiser a great deal than such observers [250]; and we will never doubt, upon a full occasion, to give just praises to present or absent.

But to return: there belongeth further to the handling of this part [251] touching the duties of professions and vocations, a Relative or opposite, touching the frauds, cautels, impostures, and vices of every profession; which hath been likewise handled: but how? rather in a satire and cynically, than seriously and wisely: for men have rather sought by wit to deride and traduce much of that which is good in profession, than with judgment to discover and sever that which is corrupt. For, as Salomon saith, He that cometh to seek after knowledge with a mind to scorn and censure, shall be sure to find matter for his humour, but no matter for his instruction: *Quærenti derisori scientiam ipsa se abscondit; sed studioso fit obviam.* But the managing of this argument with integrity and truth, which I note as deficient, seemeth to me to be one of the best fortifications for honesty and virtue that can be planted. For as the fable goeth of the Basilisk, that if he see you first you die for it, but if you see him first he dieth; so is it with deceits and evil arts; which if they be first espied they leese their life, but if they prevent they endanger. So that we are much beholden to Machiavel and others, that write what men do and not what they ought to do. For it is not possible to join serpentine wisdom with the columbine innocency, except men know exactly all the conditions of the serpent; his baseness and going upon his belly, his volubility and lubricity, his envy and sting, and the rest; that is, all forms and natures of evil. For without this, virtue lieth open and unfenced. Nay an honest man can do no good upon those that are wicked to reclaim them, without the help of the knowledge of evil. For men of corrupted minds presuppose that honesty groweth out of simplicity of manners, and believing of preachers, schoolmasters, and men's exterior language: so as, except you can make them perceive that you know the utmost reaches of their own corrupt opinions, they despise all morality. *Non recipit stultus verba prudentiæ, nisi ea dixeris quæ versantur in corde ejus* [the fool will not listen to the words of the wise, unless you first tell him what is in his own heart].[252]

Unto this part touching Respective Duty doth also appertain the duties between husband and wife, parent and child, master and servant: so likewise the laws of friendship and gratitude, the civil bond of companies, colleges, and politic bodies, of neighbourhood, and all other proportionate duties; not as they are parts of government and society, but as to the framing of the mind of particular persons.

[250] In the translation he merely adds the single example of Pliny the younger in his Panegyric on Trajan. When he wrote the *Advancement of Learning*, he appears to have been under the impression that Pliny's Panegyric was spoken after Trajan's death. See below, p. 147.

[251] So edd. 1629 and 1633. The original has *partie*.

[252] In the translation this is set down as a *desideratum* under the title of *Satira Seria sive tractatus de interioribus rerum.*

The knowledge concerning good respecting Society doth handle it also not simply alone, but comparatively; whereunto belongeth the weighing of duties between person and person, case and case, particular and public: as we see in the proceeding [253] of Lucius Brutus against his own sons, which was so much extolled; yet what was said?

Infelix, utcunque ferent ea facta [254] minores

[unhappy man! whatever judgment posterity shall pass upon that deed, etc.]. So the case was doubtful, and had opinion on both sides. Again, we see when M. Brutus and Cassius invited to a supper certain whose opinions they meant to feel, whether they were fit to be made their associates, and cast forth the question touching the killing of a tyrant being an usurper, they were divided in opinion; some holding that servitude was the extreme of evils, and others that tyranny was better than a civil war: and a number of the like cases there are of comparative duty. Amongst which that of all others is the most frequent, where the question is of a great deal of good to ensue of a small injustice. Which Jason of Thessalia determined against the truth: *Aliqua sunt injuste facienda, ut multa justa fieri possint* [that there may be justice in many things there must be injustice in some]. But the reply is good, *Authorem præsentis justitiæ habes, sponsorem futuræ non habes* [the justice that is to be done now is in your power, but where is your security for that which is to be done hereafter?] Men must pursue things which are just in present, and leave the future to the divine Providence. So then we pass on from this general part touching the exemplar and description of good.

¶ [255] Now therefore that we have spoken of this fruit of life, it remaineth to speak of the husbandry that belongeth thereunto; without which part the former seemeth to be no better than a fair image or statue which is beautiful to contemplate, but is without life and motion: whereunto Aristotle himself subscribeth in these words: *Necesse est scilicet de virtute dicere, et quid sit, et ex quibus gignatur. Inutile enim fere fuerit virtutem quidem nosse, acquirendæ autem ejus modos et vias ignorare. Non enim de virtute tantum, qua specie sit, quærendum est, sed et quomodo sui copiam faciat; utrumque enim volumus, et rem ipsam nosse, et ejus compotes fieri: hoc autem ex voto non succedet, nisi sciamus et ex quibus et quomodo.* [It is necessary to determine concerning virtue not only what it is but whence it proceeds. For there would be no use in knowing virtue without knowing the ways and means of acquiring it. For we have to consider not only what it is, but how it is to be had. For we want both to know virtue and to be virtuous; which we cannot be without knowing both the whence and the how.] In such full words and with such iteration doth he inculcate this part. So saith Cicero in great commendation of Cato the second that he had applied himself to philosophy *non ita disputandi causa, sed ita vivendi* [not that he might talk like a philosopher, but that he might live like one]. And although the neglect of our times, wherein few men do hold any consultations touching the reformation of their life, (as Seneca excellently saith, *De partibus vitæ quisque deliberat, de summâ nemo,*) [every man takes thought about the parts of his life, no man about the whole], may make this part seem superfluous; yet I must conclude with that aphorism of Hippocrates, *Qui gravi morbo correpti dolores non sentiunt, iis mens ægrotat* [they that are sick and yet feel no pain are sick in their minds]; they need medicine not only to assuage the disease but to awake the sense. And if it be said that the cure of men's minds belongeth to sacred Divinity, it is most true: but yet Moral Philosophy may be preferred unto her as a wise servant and humble handmaid. For as the Psalm saith, *that the eyes of the handmaid look perpetually towards the mistress*, and yet no doubt many things are left to the discretion of the handmaid to discern of the mistress' will; so ought Moral Philosophy to give a constant attention to the doctrines of

De Cultura Animi.

[253] *in animadversione illa severa et atroci.*—De Aug.

[254] *Fata* both in the *Advancement* and in the *De Augmentis*.

[255] De Aug. vii. 3.

Divinity, and yet so as it may yield of herself (within due limits) many sound and profitable directions.

This part therefore, because of the excellency thereof, I cannot but find exceeding strange that it is not reduced to written inquiry; the rather because it consisteth of much matter wherein both speech and action is often conversant, and such wherein the common talk of men (which is rare, but yet cometh sometimes to pass) is wiser than their books. It is reasonable therefore that we propound it in the more particularity, both for the worthiness, and because we may acquit ourselves for reporting it deficient; which seemeth almost incredible, and is otherwise conceived and presupposed by those themselves that have written. We will therefore enumerate some heads or points thereof, that it may appear the better what it is, and whether it be extant.

First therefore, in this, as in all things which are practical, we ought to cast up our account, what is in our power and what not; for the one may be dealt with by way of alteration, but the other by way of application only. The husbandman cannot command neither the nature of the earth nor the seasons of the weather; no more can the physician the constitution of the patient nor the variety of accidents. So in the culture and cure of the mind of man, two things are without our command; points of nature, and points of fortune; for to the basis of the one, and the conditions of the other, our work is limited and tied. In these things therefore it is left unto us to proceed by application:

Vincenda est omnis fortuna ferendo

[all fortune may be overcome by endurance or suffering]; and so likewise,

Vincenda est omnis natura ferendo

[all nature may be overcome by suffering]. But when that we speak of suffering, we do not speak of a dull and neglected suffering, but of a wise and industrious suffering, which draweth and contriveth use and advantage out of that which seemeth adverse and contrary; which is that property which we call Accommodating or Applying[256]. Now the wisdom of application resteth principally in the exact and distinct knowledge of the precedent state or disposition unto which we do apply: for we cannot fit a garment, except we first take measure of the body.

So then the first article of this knowledge is to set down sound and true distributions and descriptions of the several characters and tempers of men's natures and dispositions, specially having regard to those differences which are most radical in being the fountains and causes of the rest, or most frequent in concurrence or commixture [257]; wherein it is not the handling of a few of them in passage, the better to describe the mediocrities of virtues, that can satisfy this intention; for if it deserve to be considered, *that there are minds which are proportioned to great matters, and others to small* (which Aristotle handleth or ought to have handled by the name of Magnanimity), doth it not deserve as well to be considered, *that there are minds proportioned to intend many matters, and others to few*? [258] so that some can divide themselves, others can perchance do exactly well, but it must be but in few things at once; and so there cometh to be a *narrowness of mind*, as well as a *pusillanimity*. And again, *that some minds are proportioned to that which may be dispatched at once, or within a short return of time; others to that which begins afar off, and is to be won with length of pursuit;*

Jam tum tenditque fovetque

[he begins to attend and nurse his project while it is yet in the cradle]; so that

[256] These observations are omitted in the translation, and the whole passage is rewritten, though rather with a view of expressing the meaning more clearly than of altering it.

[257] It is remarkable that the observations which follow, down to "benignity or malignity", are entirely omitted in the translation.

[258] So all the editions: a second *intend* having probably dropped out accidentally.

there may be fitly said to be a *longanimity ;* which is commonly also ascribed to God as a *magnanimity*. So further deserved it to be considered by Aristotle *that there is a disposition in conversation (supposing it in things which do in no sort touch or concern a man's self) to soothe and please, and a disposition contrary to contradict and cross ;* and deserveth it not much better to be considered, *that there is a disposition, not in conversation or talk but in matter of more serious nature, (and supposing it still in things merely indifferent), to take pleasure in the good of another, and a disposition contrariwise to take distaste at the good of another ;* which is that property [259] which we call good-nature or ill-nature, benignity or malignity? And therefore I cannot sufficiently marvel that this part of knowledge touching the several characters of natures and dispositions should be omitted both in morality and policy, considering it is of so great ministery and suppeditation to them both. A man shall find in the traditions of astrology some pretty and apt divisions of men's natures, according to the predominances of the planets ; *lovers of quiet, lovers of action, lovers of victory, lovers of honour, lovers of pleasure, lovers of arts, lovers of change,* and so forth. A man shall find in the wisest sort of these Relations which the Italians make touching Conclaves, the natures of the several Cardinals handsomely and lively painted forth. A man shall meet with in every day's conference the denominations of *sensitive, dry, formal, real, humorous, certain, huomo di prima impressione, huomo di ultima impressione* and the like [260] : and yet nevertheless this kind of observations wandereth in words, but is [261] not fixed in inquiry. For the distinctions are found (many of them), but we conclude no precepts upon them ; wherein our fault is the greater, because both history, poesy, and daily experience are as goodly fields where these observations grow ; whereof we make a few posies to hold in our hands, but no man bringeth them to the confectionary, that receits might be made of them for use of life[262].

Of much like kind are those impressions of nature, which are imposed upon the mind *by the sex, by the age, by the region, by health and sickness, by beauty and deformity*, and the like, which are inherent and not extern ; and again those which are caused by extern fortune ; as *sovereignity, nobility, obscure birth, riches, want, magistracy, privateness, prosperity, adversity, constant fortune, variable fortune, rising per saltum, per gradus,* and the like. And therefore we see that Plautus maketh it a wonder to see an old man beneficent : *benignitas hujus ut adolescentuli est* [he is as generous as if he were a young man] : St. Paul concludeth that severity of discipline was to be used to the Cretans, *Increpa eos durè* [rebuke them sharply], upon the disposition of their country ; *Cretenses*

[259] *properly* both in the original, and in edd. 1629 and 1633.

[260] This sentence is omitted in the translation ; perhaps from the difficulty of finding equivalent terms in Latin ; but the substance of the observation is contained in the remark (transplanted from a former paragraph) that in this matter the common talk of men is wiser than their books.

[261] *as* both in the original and in edd. 1629 and 1633.

[262] In place of this we have in the translation a passage of considerable length recommending the wiser sort of historians as supplying the best material for this kind of treatise ; not only in the formal character which they commonly give of any principal personage on recording his death, but still more in the occasional observations interwoven into the body of the narrative, when in relating any of his actions they introduce some remark upon his nature and disposition. Bacon instances the character of Africanus and the elder Cato as drawn by Livy ; of Tiberius, Claudius, and Nero, in Tacitus ; of Septimius Severus, in Herodian ; of Louis XI. in Philip de Comines ; of Ferdinand, Maximilian, Leo, and Clement, in Guicciardini. (His own Henry VII. would have furnished another instance, as good as any). Of these he would have a full and careful analysis made, exhibiting not the entire character, but the several features and individual peculiarities of mind and disposition which make it up (*imaginum ipsarum lineæ et ductus magis simplices*), with their connexion and bearing one upon another :—a kind of moral and mental anatomy, as a basis for a system of moral and mental medicine. He prefers the historians to the poets for this purpose, because in the poets the characters are commonly drawn with exaggeration.

semper mendaces, malæ bestiæ, ventres pigri [the Cretans are always liars, evil beasts, slow bellies]: Sallust noteth that it is usual with Kings to desire contradictories; *Sed plerumque regiæ voluntates, ut vehementes sunt, sic mobiles, sæpeque ipsæ sibi adversæ* [royal desires, as they are violent, so are they changeable, and often incompatible with each other]: Tacitus observeth how rarely raising of the fortune mendeth the disposition; *Solus Vespasianus mutatus in melius* [Vespasian the only one of the emperors that changed for the better]: Pindarus maketh an observation that great and sudden fortune for the most part defeateth men [263]; *Qui magnam felicitatem concoquere non possunt* [that cannot digest great felicity]: so the Psalm sheweth it is more easy to keep a measure in the enjoying [264] of fortune than in the increase of fortune; *Divitiæ si affluant, nolite cor apponere* [if riches increase, set not your heart upon them]. These observations and the like I deny not but are touched a little by Aristotle as in passage in his Rhetorics, and are handled in some scattered discourses; but they were never incorporate into Moral Philosophy, to which they do essentially appertain; as the knowledge of the diversity of grounds and moulds doth to agriculture, and the knowledge of the diversity of complexions and constitutions doth to the physician; except we mean to follow the indiscretion of empirics, which minister the same medicines to all patients.

Another article of this knowledge is the inquiry touching the affections; for as in medicining of the body it is in order first to know the divers complexions and constitutions, secondly the diseases, and lastly the cures; so in medicining of the mind, after knowledge of the divers characters of men's natures, it followeth in order to know the diseases and infirmities of the mind, which are no other than the perturbations and distempers of the affections. For as the ancient politiques [265] in popular estates were wont to compare the people to the sea and the orators to the winds, because as the sea would of itself be calm and quiet if the winds did not move and trouble it, so the people would be peaceable and tractable if the seditious orators did not set them in working and agitation; so it may be fitly said, that the mind in the nature thereof would be temperate and stayed, if the affections, as winds, did not put it into tumult and perturbation. And here again I find strange, as before, that Aristotle should have written divers volumes of Ethics, and never handled the affections, which is the principal subject thereof; and yet in his Rhetorics, where they are considered but collaterally and in second degree (*as they may be moved by speech*), he findeth place for them, and handleth them well for the quantity; but where their true place is, he pretermitteth them. For it is not his disputations about pleasure and pain that can satisfy this inquiry, no more than he that should generally handle the nature of light can be said to handle the nature of colours; for pleasure and pain are to the particular affections as light is to particular colours. Better travails I suppose had the Stoics taken in this argument, as far as I can gather by that which we have at second hand: but yet it is like it was after their manner, rather in subtilty of definitions (which in a subject of this nature are but curiosities) than in active and ample descriptions and observations. So likewise I find some particular writings of an elegant nature touching some of the affections, as of *anger*, of *comfort upon adverse accidents* [266], of *tenderness of countenance* [267], and other. But the poets and writers of histories are the best doctors of this knowledge; where we may find painted forth with great life, how affections are kindled and incited; and how pacified and refrained; and how again contained from act and further degree; how they disclose themselves, how they work, how they vary, how they gather and fortify [268], how they are inwrapped one within another, and how they do fight and encounter one with another, and other the like particularities: amongst the which this last is of special use in moral and civil matters;

[263] *animos plerumque enervare et solvere.*—De Aug. [264] *statu.*—De Aug.

[265] So edd. 1629 and 1633. The original has *in politiques*.

[266] This is omitted in the translation.

[267] This I suppose is what the French call *mauvaise honte*. The translation is *De inutili verecundia*, which is the Latin rendering of περὶ δυσωπίας, the title of a tract by Plutarch. [268] This is omitted in the translation.

how (I say) to set affection against affection, and to master one by another; even as we use to hunt beast with beast and fly bird with bird, which otherwise percase we could not so easily recover: upon which foundation is erected that excellent use of *præmium* and *pœna*, whereby civil states consist; employing the predominant affections of *fear* and *hope*, for the suppressing and bridling the rest. For as in the government of states it is sometimes necessary to bridle one faction with another, so it is in the government within.

Now come we to those points which are within our own command, and have force and operation upon the mind to affect the will and appetite and to alter manners: wherein they ought to have handled *custom, exercise, habit, education, example, imitation, emulation, company, friends, praise, reproof, exhortation, fame, laws, books, studies:* these as [269] they have determinate use in moralities, from these the mind suffereth, and of these are such receipts and regiments compounded and described, as may seem to recover or preserve the health and good estate of the mind, as far as pertaineth to human medicine: of which number we will visit [270] upon some one or two as an example of the rest, because it were too long to prosecute all; and therefore we do resume Custom and Habit to speak of.

The opinion of Aristotle seemeth to me a negligent opinion, that of those things which consist by nature nothing can be changed by custom; using for example, that if a stone be thrown ten thousand times up, if will not learn to ascend; and that by often seeing or hearing, we do not learn to see or hear the better. For though this principle be true in things wherein nature is *peremptory*, (the reason whereof we cannot now stand to discuss), yet it is otherwise in things wherein nature admitteth *a latitude*. For he might see that a strait glove will come more easily on with use, and that a wand will by use bend otherwise than it grew, and that by use of the voice we speak louder and stronger, and that by use of enduring heat or cold we endure it the better, and the like: which later sort have a nearer resemblance unto that subject of manners he handleth than those instances which he allegeth. But allowing his conclusion, *that virtues and vices consist in habit*, he ought so much the more to have taught the manner of superinducing that habit: for there be many precepts of the wise ordering the exercises of the mind, as there is of ordering the exercises of the body; whereof we will recite a few.

The first shall be, that we beware we take not at the first either too *high* a strain or too *weak*: for if too high, in a diffident [271] nature you discourage; in a confident nature you breed an opinion of facility, and so a sloth; and in all natures you breed a further expectation than can hold out, and so an insatisfaction [272] on the end: if too weak of the other side, you may not look to perform and overcome any great task.

Another precept is, to practise all things chiefly at two several times, the one when the mind is best disposed, the other when it is worst disposed; that by the one you may gain a great step, by the other you may work out the knots and stonds of the mind, and make the middle times the more easy [273] and pleasant.

Another precept is, that which Aristotle mentioneth by the way, which is to bear ever towards the contrary extreme of that whereunto we are by nature inclined: like unto the rowing against the stream, or making a wand straight by bending [274] him contrary to his natural crookedness.

Another precept is, that the mind is brought to any thing better, and with more sweetness and happiness, if that whereunto you pretend be not first in the

[269] So in all the editions. Perhaps it should be *are*. (*Hæc enim sunt illa quæ regnant in moralibus*). If *as* be right, we should properly read, *for from these* etc.

[270] So the original. Edd. 1629 and 1633 have *insist:* perhaps rightly. The translation has *unum aut alterum deligemus in quibus paullulum immorabimur.*

[271] So edd. 1629 and 1633. The original has *different.*

[272] And thence a discouragement—(*id quod animum semper dejicit et confundit*).

[273] So edd. 1629 and 1633. The original has *easily.* Possibly Bacon wrote *run more easily.* The translation has *facile et placide delabentur.* This part of the original edition is carelessly printed.

[274] So ed. 1633. The original has *bynding*, and ed. 1629 *binding.*

intention, but *tanquam aliud agendo*, because of the natural hatred of the mind against necessity and constraint. Many other axioms there are touching the managing of *Exercise* and *Custom*; which being so conducted, doth prove indeed another nature: but being governed by chance, doth commonly prove but an ape of nature, and bringeth forth that which is lame and counterfeit.

So if we should handle *books* and *studies*, and what influence and operation they have upon manners, are there not divers precepts of great caution and direction appertaining thereunto? Did not one of the fathers in great indignation call Poesy *vinum dæmonum*, because it increaseth temptations, perturbations, and vain opinions? Is not the opinion of Aristotle worthy to be regarded, wherein he saith that young men are no fit auditors of moral philosophy [275], because they are not settled from the boiling heat of their affections, nor attempered with time and experience? And doth it not hereof come, that those excellent books and discourses of the ancient writers (whereby they have persuaded unto virtue most effectually, by representing her in state and majesty, and popular opinions against virtue in their parasites' coats, fit to be scorned and derided;) are of so little effect towards honesty of life, because they are not read and revolved by men in their mature and settled years, but confined almost to boys and beginners? But is it not true also, that much less young men are fit auditors of matters of policy, till they have been thoroughly seasoned in religion and morality; lest their judgments be corrupted, and made apt to think that there are no true differences of things, but according to utility and fortune; as the verse describes it, *Prosperum et felix scelus virtus vocatur* [a crime that is successful is called a virtue]; and again, *Ille crucem pretium sceleris tulit, hic diadema* [the same crime is rewarded in one man with a gibbet and in another with a crown]; which the poets do speak satirically, and in indignation on virtue's behalf; but books of policy do speak it seriously and positively; for so it pleaseth Machiavel to say, *that if Cæsar had been overthrown he would have been more odious than ever was Catiline*; as if there had been no difference but in fortune, between a very fury of lust and blood, and the most excellent spirit (his ambition reserved) of the world? Again, is there not a caution likewise to be given of the doctrines of moralities themselves (some kinds of them), lest they make men too precise, arrogant, incompatible; as Cicero saith of Cato, *In Marco Catone hæc bona quæ videmus divina et egregia, ipsius scitote esse propria; quæ nonnunquam requirimus, ea sunt omnia non a naturâ, sed a magistro* [his excellences were his own, his defects came from the schoolmaster]? Many other axioms and advices there are touching those proprieties and effects which studies do infuse and instil into manners. And so likewise is there touching the use of all those other points, of company, fame, laws, and the rest, which we recited in the beginning in the doctrine of morality.

But there is a kind of Culture of the Mind that seemeth yet more accurate and elaborate than the rest, and is built upon this ground; that the minds of all men are at some times in a state more perfect, and at other times in a state more depraved. The purpose therefore of this practice [276] is to fix and cherish the good hours of the mind, and to obliterate and take forth the evil. The fixing of the good hath been practised by two means; vows or constant resolutions; and observances and exercises; which are not to be regarded so much in themselves, as because they keep the mind in continual obedience. The obliteration of the evil hath been practised by two means; some kind of redemption or expiation of that which is past; and an inception or account *de novo* for the time to come. But this part seemeth sacred and religious, and justly; for all good Moral Philosophy (as was said) is but an handmaid to religion.

[275] Not of *moral* but of *political* philosophy. See Mr. Ellis's note to *De Aug.* B. vii., near end. That in the passage there quoted from *Troilus and Cressida* the observation and the error were both derived directly from the *Advancement of Learning* admits of little doubt. But how came Virgilio Malvezzi, in his *Discorsi sopro Cornelio Tacito* published in 1622, to make the same mistake? "E non è discordante da questa mia opinione Aristotele, il qual dice, che i giovani non sono buoni ascultatori delle *morali*." I quote from ed. 1635. The passage occurs in the address to the reader, p. 3.

[276] *i.e.* method of culture (*hujus culturæ intentio et institutum*).

Wherefore we will conclude with that last point which is of all other means the most compendious and summary, and again the most noble and effectual, to the reducing of the mind unto virtue and good estate; which is the electing and propounding unto a man's self good and virtuous ends of his life, such as may be in a reasonable sort within his compass to attain. For if these two things be supposed, that a man set before him honest and good ends, and again that he be resolute constant, and true unto them, it will follow that he shall mould himself into all virtue at once. And this is indeed like the work of nature; whereas the other course is like the work of the hand. For as when a carver makes an image, he shapes only that part whereupon he worketh; as if he be upon the face, that part which shall be the body is but a rude stone still, till such times as he comes to it; but contrariwise when nature makes a flower or living creature, she formeth rudiments of all the parts at one time; so in obtaining virtue by *habit*, while a man practiseth temperance, he doth not profit much to fortitude, nor the like; but when he dedicateth and applieth himself to *good ends*, look what virtue soever the pursuit and passage towards those ends doth commend unto him, he is invested of a precedent disposition to conform himself thereunto; which state of mind Aristotle doth excellently express himself, that it ought not be to called *virtuous*, but *divine;* his words are these: *Immanitati autem consentaneum est opponere eam, quæ supra humanitatem est, heroicam sive divinam virtutem:* and a little after, *Nam ut feræ neque vitium neque virtus est, sic neque Dei: sed hic quidem status altius quiddam virtute est, ille aliud quiddam a vitio* [that which answers to the brutal degree of vice is the heroical or divine degree of virtue. . . . For as neither virtue nor vice can be predicated of a brute, so neither can it of a God: the divine condition being something higher than virtue, the brutal something different from vice]. And therefore we may see what celsitude of honour Plinius Secundus attributeth to Trajan in his funeral oration [277], where he said, *that men needed to make no other prayers to the gods, but that they would continue as good lords to them as Trajan had been;* as if he had not been only an imitation of divine nature but a pattern of it. But these be heathen and profane passages, having but a shadow of that divine state of mind which religion and the holy faith doth conduct men unto, by imprinting upon their souls Charity, which is excellently called the bond of Perfection, because it comprehendeth and fasteneth all virtues together. And as [278] it is elegantly said by Menander of vain love, which is but a false imitation of divine love, *Amor melior sophista lævo ad humanam vitam*, that love teacheth a man to carry himself better than the sophist or preceptor, which he calleth *left-handed*, because with all his rules and preceptions he cannot form a man so *dexterously*, nor with that facility to prize himself and govern himself, as love can do; so certainly if a man's mind be truly inflamed with charity, it doth work him suddenly into greater perfection than all the doctrine of morality can do, which is but a sophist in comparison of the other. Nay further, as Xenophon observed truly that all other affections, though they raise the mind, yet they do it by distorting and uncomeliness of ecstasies or excesses; but only love doth exalt the mind, and nevertheless at the same instant doth settle and compose it; so in all other excellencies, though they advance nature, yet they are subject to excess; only charity admitteth no excess: for so we see, aspiring to be like God in power, the angels transgressed and fell; *Ascendam, et ero similis Altissimo* [I will ascend and be like unto the Highest]: by aspiring to be like God in knowledge, man transgressed and fell; *Eritis sicut Dii, scientes bonum et malum* [ye shall be as Gods, knowing good and evil]; but by aspiring to a similitude of God in goodness or love, neither man nor angel ever transgressed or shall transgress. For unto that imitation we are called: *Diligite inimicos vestros, benefacite eis qui oderunt vos, et orate pro persequentibus et calumniantibus vos, ut sitis filii Patris vestri qui in cœlis est, qui solem suum oriri facit super bonos et malos, et pluit super justos et injustos;* [love your enemies, do good to them that hate you, and pray for them which despitefully use you and persecute you, that ye may

[277] The words "funeral oration" are omitted in the translation. It was not a funeral oration, but a Panegyric spoken in Trajan's presence. See above, p. 140.

[278] So edd. 1629 and 1633. The original omits *as*.

be the children of your Father which is in heaven, who maketh his sun to rise on the evil and on the good, and sendeth rain on the just and on the unjust]. So in the first platform of the divine nature itself, the heathen religion speaketh thus, *Optimus Maximus* [Best and Greatest]: and the sacred Scriptures thus, *Misericordia ejus super omnia opera ejus* [his mercy is over all his works].

Wherefore I do conclude this part of moral knowledge, concerning the Culture and Regiment of the Mind; wherein if any man, considering the parts thereof which I have enumerated, do judge that my labour is but to collect into an Art or Science that which hath been pretermitted by others as matter of common sense and experience, he judgeth well. But as Philocrates sported with Demosthenes, *You may not marvel (Athenians), that Demosthenes and I do differ, for he drinketh water, and I drink wine;* and like as we read of an ancient parable of *the two gates of sleep,*

> Sunt geminæ somni portæ: quarum altera fertur
> Cornea, qua veris facilis datur exitus umbris:
> Altera candenti perfecta nitens elephanto,
> Sed falsa ad cœlum mittunt insomnia manes:
> [Two gates there are of sleep; of horn the one,
> By which the true shades pass; of ivory
> Burnished and white the other, but through it
> Into the upper world false dreams are sent]:

so if we put on sobriety and attention, we shall find it a sure maxim in knowledge that the more pleasant liquor (*of wine*) is the more vaporous, and the braver gate (*of ivory*) sendeth forth the falser dreams [279].

But we have now concluded *that general part of Human Philosophy, which contemplateth man segregate, and as he consisteth of body and spirit.* Wherein we may further note, that there seemeth to be a relation or conformity between the good of the mind and the good of the body. For as we divided the good of the body into *health, beauty, strength,* and *pleasure;* so the good of the mind, inquired in rational and moral knowledge[280], tendeth to this, to make the mind *sound,* and without perturbation; *beautiful,* and graced with decency; and *strong* and *agile* for all duties of life. These three, as in the body so in the mind, seldom meet, and commonly sever. For it is easy to observe that many have strength of wit and courage, but have neither health from perturbations, nor any beauty or decency in their doings: some again have an elegancy and fineness of carriage, which have neither soundness of honesty, nor substance of sufficiency: and some again have honest and reformed minds, that can neither become themselves nor manage business: and sometimes two of them meet, and rarely all three. As for pleasure, we have likewise determined that the mind ought not to be reduced to stupidity, but to retain pleasure; confined rather in the subject of it, than in the strength and vigour of it [281].

[279] The allusion to Philocrates and Demosthenes and to the difference between wine and water is omitted in the translation; probably because Bacon had since used the same illustration in an opposite sense (see *Nov. Org.* i. 123.), taking the wine to represent his own philosophy, with its variety of material and elaborate process of manufacture, and the water to represent the popular philosophy of his time which was content with what came; and the present passage reads the clearer and better for the omission. After "he judgeth well", yet let him remember (he says) that the object I am in pursuit of is not beauty and fair appearance, but utility and truth; and let him a little call to mind the meaning of that ancient parable, *Sunt geminæ somni portæ*, etc. Great no doubt is the magnificence of the ivory gate, but the true dreams pass by the gate of horn.

[280] *i.e.* considered with reference to reason and morals—(*si juxta moralis doctrinæ scita illud contemplemur*).

[281] For in a mind properly disposed, the act and exercise of virtue ought to be accompanied with a sense of pleasure; as is more clearly expressed in the translation. There are some, he says, who have both health, beauty, and strength of mind; and so perform their duties well; but, from a kind of Stoical severity and insensibility, take no pleasure

¶ [282] CIVIL Knowledge is conversant about a subject which of all others is most immersed in matter, and hardliest reduced to axiom. Nevertheless, as Cato the censor said, *That the Romans were like sheep, for that a man might better drive a flock of them, than one of them ; for in a flock, if you could get but some few go right, the rest would follow* : so in that respect moral philosophy is more difficile than policy. Again, moral philosophy propoundeth to itself the framing of internal goodness ; but civil knowledge requireth only an external goodness ; for that as to society sufficeth ; and therefore it cometh oft to pass that there be evil times in good governments : for so we find in the holy story, when the kings were good, yet it is added, *Sed adhuc populus non direxerat* [283] *cor suum ad Dominum Deum patrum suorum* [but as yet the people had not turned their hearts towards the Lord God of their fathers]. Again, States, as great engines, move slowly, and are not so soon put out of frame : for as in Egypt the seven good years sustained the seven bad, so governments for a time well grounded do bear out errors following : but the resolution of particular persons is more suddenly subverted. These respects do somewhat qualify the extreme difficulty of civil knowledge.

This knowledge hath three parts, according to the three summary actions of society ; which are Conversation, Negotiation, and Government. For man seeketh in society comfort, use and protection : and they be three wisdoms of divers natures, which do often sever ; wisdom of the behaviour, wisdom of business, and wisdom of state.

The wisdom of Conversation ought not to be over much affected, but much less despised ; for it hath not only an honour in itself, but an influence also into business and government [284]. The poet saith,

Nec vultu destrue verba tuo :

a man may destroy the force of his words with his countenance : so may he of his deeds, saith Cicero ; recommending to his brother affability and easy access ; *Nil interest habere ostium apertum, vultum clausum ;* it is nothing won to admit men with an open door, and to receive them with a shut and reserved countenance. So we see Atticus, before the first interview between Cæsar and Cicero, the war depending, did seriously advise Cicero touching the composing and order ing of his countenance and gesture. And if the government of the countenance be of such effect, much more is that of the speech, and other carriage appertaining to conversation ; the true model whereof seemeth to me well expressed by Livy, though not meant for this purpose ; *Ne aut arrogans videar, aut obnoxius ; quorum alterum est alienæ libertatis obliti, alterum suæ :* the sum of behaviour is to retain a man's own dignity, without intruding upon the liberty of others. On the other side, if behaviour and outward carriage be intended too much, first it may pass into affection [285], and then *quid deformius quam scenam in vitam transferre* [what more unseemly than to be always playing a part] ; to act a man's life ? But although it proceed not to that extreme, yet it consumeth time, and employeth the mind too much. And therefore as we use to advise young students from company keeping, by saying, *Amici fures temporis* [friends are thieves of time] ; so certainly the intending of the discretion of behaviour is a great thief of meditation. Again, such as are accomplished in that honor [286] of urbanity

in them (*sed tamen Stoica quadam tristitia et stupiditate præditi, virtutis quidem actiones exercent, gaudiis non perfruuntur*).

[282] De Aug. viii. 1.

[283] *dixerat* in the original and also in edd. 1629 and 1633. *direxerat.*—De Aug.

[284] In the translation he compares the value of Conversation in business to that of action in oratory.

[285] So the original. Edd. 1629 and 1633 have *affectation ;* which is the more modern form of the word. But the other was I think the more common when the *Advancement* was written.

[286] *howr* in original : *hour* in ed. 1633. Ed. 1629 has *forme ;* which is the reading of all the modern editions. But *fourme* could not easily be mistaken for *howr*, whereas *honor* carelessly written would be hardly distinguishable from it. The translation also,

please themselves in name [287], and seldom aspire to higher virtue ; whereas those that have defect in it do seek comeliness by reputation : for where reputation is, almost every thing becometh ; but where that is not, it must be supplied by *puntos* and compliments. Again, there is no greater impediment of action than an over-curious observance of decency, and the guide of decency, which is time and season. For as Salomon sayeth, *Qui respicit ad ventos, non seminat ; et qui respicit ad nubes non metet ;* [he that looketh to the winds doth not sow, and he that regardeth the clouds shall not reap] : a man must make his opportunity, as oft as find it. To conclude ; Behaviour seemeth to me as a garment of the mind, and to have the conditions of a garment. For it ought to be made in fashion ; it ought not to be too curious ; it ought to be shaped so as to set forth any good making of the mind, and hide any deformity ; and above all, it ought not to be too strait or restrained for exercise or motion. But this part of civil knowledge hath been elegantly handled, and therefore I cannot report it for deficient.

¶ [288] The wisdom touching Negotiation or Business hath not been hitherto collected into writing, to the great derogation of learning and the professors of learning. For from this root springeth chiefly that note or opinion, which by us is expressed in adage to this effect, that there is no great concurrence between learning and wisdom. For of the three wisdoms which we have set down to pertain to civil life, for wisdom of Behaviour, it is by learned men for the most part despised, as an inferior to virtue and an enemy to meditation ; for wisdom of Government, they acquit themselves well when they are called to it, but that happeneth to few ; but for the wisdom of Business, wherein man's life is most conversant, there be no books of it, except some few scattered advertisements that have no proportion to the magnitude of this subject. For if books were written of this as the other, I doubt not but learned men with mean experience would far excel men of long experience without learning, and outshoot them in their own bow.

Neither needeth it at all to be doubted that this knowledge should be so variable as it falleth not under precept ; for it is much less infinite than science of Government, which we see is laboured and in some part reduced. Of this wisdom it seemeth some of the ancient Romans in the saddest and wisest times were professors ; for Cicero reporteth that it was then [289] in use for senators that had name and opinion for general wise men, as Coruncanius, Curius, Lælius, and many others, to walk at certain hours in the Place, and to give audience to those that would use their advice ; and that the particular citizens would resort unto them, and consult with them of the marriage of a daughter, or of the employing of a son, or of a purchase or bargain, or of an accusation, and every other occasion incident to man's life ; so as there is a wisdom of counsel and advice even in private causes, arising out of an universal insight into the affairs of the world ; which is used indeed upon particular cases [290] propounded, but is gathered by general observation of causes of like nature. For so we see in the book which Q. Cicero [291] writeth to his brother *De petitione consulatus* (being the only book of business that I know written by the ancients), although it concerned a particular action then on foot, yet the substance thereof consisteth of many wise and politic axioms, which contain not a temporary but a perpetual direction in the case of popular elections. But chiefly we may see in those aphorisms which have place amongst divine writings, composed by Salomon the king, of whom

though the expression is altered, preserves the idea of honour. *Qui primas adeo in urbanitate obtinent et ad hanc rem unam quasi nati videntur.*

[287] So both the original and ed. 1633. Ed. 1629 has " in *it* " ; which has been followed by modern editors. The translation has *ut sibi ipsis in illa sola complaceant.* If *name* be the right word (which I doubt) the meaning must be that they are satisfied with the good report which it procures them. Perhaps it should be " please themselves in the same ".

[288] De Aug. viii. 2.

[289] *i.e.* in the times of which he writes,—a little before his own. (*paulo ante sua secula*).

[290] So the original. Edd. 1629 and 1633 have *causes.*

[291] So edd. 1629 and 1633 and *De Aug.* The original omits *Q.*

the Scriptures testify that his heart was as the sands of the sea, encompassing the world and all worldly matters; we see, I say, not a few profound and excellent cautions, precepts, positions, extending to much variety of occasions; whereupon we will stay awhile, offering to consideration some number of examples [292].

Sed et cunctis sermonibus qui dicuntur ne accommodes aurem tuam, ne forte audias servum tuum maledicentem tibi [Hearken not unto all words that are spoken, lest thou hear thy servant curse thee]. Here is concluded the provident stay of inquiry of that which we would be loth to find [293]: as it was judged great wisdom in Pompeius Magnus that he burned Sertorius' papers unperused.

Vir sapiens si cum stulto contenderit, sive irascatur sive rideat, non inveniet requiem [A wise man if he contend with a fool, whether he be angry or whether he laugh, shall find no rest]. Here is described the great disadvantage which a wise man hath in undertaking a lighter person than himself; which is such an engagement as whether a man turn the matter to jest, or turn it to heat, or howsoever he change copy, he can no ways quit himself well of it.

Qui delicatè a pueritia nutrit servum suum, postea sentiet eum contumacem [He that delicately bringeth up his servant from a child shall have him become froward at the length]. Here is signified, that if a man begin too high a pitch in his favours, it doth commonly end in unkindness and unthankfulness.

Vidisti virum velocem in opere suo? Coram regibus stabit, nec erit inter ignobiles [Seest thou a man that is quick in his business? He shall stand before kings; his place shall not be among mean men]. Here is observed that, of all virtues for rising to honour, quickness of dispatch is the best; for superiors many times love not to have those they employ too deep or too sufficient, but ready and diligent.

Vidi cunctos viventes qui ambulant sub sole, cum adolescente secundo qui consurgit pro eo [I beheld all the living which walk under the sun, with the second youth that shall stand in his place]. Here is expressed that which was noted by Sylla first, and after him by Tiberius: *Plures adorant solem orientem quam occidentem vel meridianum* [294] [there be more that worship the rising sun than the sun setting or at mid-day].

Si spiritus potestatem habentis ascenderit super te, locum tuum ne dimiseris; quia curatio faciet cessare peccata maxima [If the spirit of the ruler rise up against thee, leave not thy place; for observance will remove great offences]. Here caution is given that upon displeasure, retiring is of all courses the unfittest; for a man leaveth things at worst, and depriveth himself of means to make them better.

Erat civitas parva, et pauci in ea viri: venit contra eam rex magnus, et vadavit eam, intruxitque munitiones per gyrum, et perfecta est obsidio: inventusque est in ea vir pauper et sapiens, et liberavit eam per sapientiam suam; et nullus deinceps recordatus est hominis illius pauperis [There was a little city and few men within it; and there came a great king against it and besieged it and raised great bulwarks round about it: and there was found in it a poor wise man, and he by his wisdom delivered the city; yet no man remembered that same poor man]. Here the corruption [295] of states is set forth, that esteem not virtue or merit longer than they have use of it.

Mollis responsio frangit iram [A soft answer defeateth wrath]. Here is noted that silence or rough answer exasperateth; but an answer present and temperate pacifieth.

Iter pigrorum quasi sepes spinarum [The way of the slothful is as an hedge

[292] This is what he calls in the translation *Doctrina de Negotiis Sparsis*. The example which follows is greatly enlarged: the number of proverbs commented upon being increased by a third, and the comments being much fuller.

[293] Compare L'Estrange's *Fables and storyes moralized*, vol. ii. p. 6, ed. 1708.

[294] The words *vel meridianum* are omitted in the translation; and it is difficult to understand how they got in; for they are not to be found in either of the passages alluded to, and they seem to carry the observation beyond the truth.

[295] So edd. 1629 and 1633. The original has *corruptions*.

of thorns]. Here is lively represented how laborious sloth proveth in the end; for when things are deferred till the last instant and nothing prepared beforehand, every step findeth a brier or an impediment, which catcheth or stoppeth.

Melior est finis orationis quam principium [Better is the end of a speech than the beginning thereof]. Here is taxed the vanity of formal speakers, that study more about prefaces and inducements than upon the conclusions and issues of speech.

Qui cognoscit in judicio faciem, non bene facit; iste et pro buccella panis deseret veritatem [He that respecteth persons in judgment doth not well; even for a piece of bread will that man depart from the truth]. Here is noted, that a judge were better be a briber than a respecter of persons; for a corrupt judge offendeth not so lightly [296] as a facile.

Vir pauper calumnians pauperes similis est imbri vehementi, in quo paratur fames [A poor man that beareth witness against the poor is like a sweeping rain which leaveth no food]. Here is expressed the extremity of necessitous extortions, figured in the ancient fable of the full and hungry horse-leech.

Fons turbatus pede, et vena corrupta, est justus cadens coram impio [A righteous man falling down before the wicked is as a troubled fountain and a corrupt spring]. Here is noted, that one judicial and exemplar iniquity in the face of the world, doth trouble the fountains of justice more than many particular injuries passed over by connivance.

[297] *Qui subtrahit aliquid a patre et a matre, et dicit hoc non esse peccatum, particeps est homicidii* [Whoso robbeth his father and his mother, and saith it is no transgression, is the companion of a destroyer]. Here is noted, that whereas men in wronging their best friends use to extenuate their fault, as if they might presume or be bold upon them, it doth contrariwise indeed aggravate their fault, and turneth it from injury to impiety.

Noli esse amicus homini iracundo, nec ambulato cum homine furioso [Make no friendship with an angry man, neither go with a furious man]. Here caution is given, that in the election of our friends we do principally avoid those which are impatient, as those that will espouse us to many factions and quarrels.

Qui conturbat domum suam, possidebit ventum [He that troubleth his own house shall inherit the wind]. Here is noted, that in domestical separations and breaches men do promise to themselves quieting of their mind and contentment; but still they are deceived of their expectation, and it turneth to wind.

Filius sapiens lætificat patrem: filius vero stultus mœstitia est matri suæ [A wise son maketh a glad father, but a foolish son is the heaviness of his mother]. Here is distinguished, that fathers have most comfort of the good proof of their sons; but mothers have most discomfort of their ill proof, because women have little discerning of virtue, but of fortune [298].

Qui celat delictum, quærit amicitiam; sed qui altero sermone repetit, separat fœderatos [He that covereth a transgression seeketh love, but he that repeateth a matter separateth very friends]. Here caution is given, that reconcilement is better managed by an *amnesty*, and passing over that which is past, than by apologies and excusations.

In omni opere bono erit abundantia; ubi autem verba sunt plurima, ibi frequenter

[296] So the original. Edd. 1629 and 1633 have *highly*: a conjectural emendation probably, by some critic who did not know that *lightly* meant *easily, readily, upon slight occasion*; or did not observe that the point of the observation rests entirely upon this word. The corrupt judge does not offend less highly than the facile; but less frequently.

[297] This proverb is omitted in the translation.

[298] In the translation he adds two other causes—the greater tenderness of the mother's affection, and (perhaps) a consciousness that her own indulgence has spoiled her son; and instead of saying that the mother has "little discerning of virtue", he only says that the father understands its value better. The allusion to fortune is omitted altogether; and indeed it is not easy to see how it bears upon the case in point; the son in question being by the supposition not unfortunate but foolish. I thought it right to mention this alteration, because it is more than a development of the remark in the text; it is a correction of the opinion implied in it.

egestas [In every good work there shall be abundance, but where there are many words there is penury]. Here is noted that words and discourse abound most where there is idleness and want.

Primus in sua causa justus ; sed venit altera pars, et inquirit in eum [He that is first in his own cause seemeth just ; but the other party cometh and searcheth him]. Here is observed, that in all causes the first tale possesseth much ; in sort [299] that the prejudice thereby wrought will be hardly removed, except some abuse or falsity in the information be detected.

[300] *Verba bilinguis quasi simplicia, et ipsa perveniunt ad interiora ventris* [The words of the double-tongued man which seem artless are they that go down to the innermost parts of the belly]. Here is distinguished, that flattery and insinuation which seemeth set and artificial sinketh not far ; but that entereth deep which hath shew of nature, liberty, and simplicity.

Qui erudit derisorem, ipse sibi injuriam facit ; et qui arguit impium, sibi maculam generat [He that reproveth a scorner doth himself wrong, and he that rebuketh a wicked man getteth himself a blot]. Here caution is given how we tender reprehension to arrogant and scornful natures, whose manner is to esteem it for contumely, and accordingly to return it.

Da sapienti occasionem, et addetur ei sapientia [Give opportunity to a wise man, and he will be yet wiser]. Here is distinguished the wisdom brought into habit, and that which is but verbal and swimming only in conceit ; for the one upon the occasion presented is quickened and redoubled, the other is amazed and confused.

Quomodo in aquis resplendent vultus prospicientium, sic corda hominum manifesta sunt prudentibus [As the face of one that looketh upon the water is reflected therein, so the hearts of men are manifest unto the wise]. Here the mind of a wise man is compared to a glass, wherein the images of all diversity of natures and customs are represented ; from which representation proceedeth that application,

Qui sapit, innumeris moribus aptus erit

[a wise man will know how to apply himself to all sorts of characters].

Thus have I staid somewhat longer upon these sentences politic of Salomon than is agreeable to the proportion of an example ; led with a desire to give authority to this part of knowledge, which I noted as deficient, by so excellent a precedent ; and have also attended them with brief observations, such as to my understanding offer no violence to the sense, though I know they may be applied to a more divine use : but it is allowed even in divinity, that some interpretations, yea and some writings, have more of the Eagle than others. But taking them as instructions for life, they might have received large discourse, if I would have broken them and illustrated them by deducements and examples.

Neither was this in use only with the Hebrews ; but it is generally to be found in the wisdom of the more ancient times, that as men found out any observation that they thought was good for life, they would gather it and express it in parable or aphorism or fable. But for fables, they were vicegerents and supplies where examples failed : now that the times abound with history, the aim is better when the mark is alive. And therefore the form of writing which of all others is fittest for this variable argument of negotiation and occasions is that which Machiavel chose wisely and aptly for government ; namely, *discourse upon histories or examples*. For knowledge drawn freshly and in our view out of particulars, knoweth the best way to particulars again. And it hath much greater life for practice when the discourse attendeth upon the example, than when the example attendeth upon the discourse. For this is no point of order, as it seemeth at first, but of substance. For when the example is the ground, being set down in an history at large, it is set down with all circumstances. which may sometimes control the discourse thereupon made and sometimes supply it, as a very pattern

[299] So the original. Edd. 1629 and 1633 have *in such sort :* an attempt at correction where none was wanted.

[300] This proverb is omitted in the translation.

for action [301]; whereas the examples alleged for the discourse's sake are cited succinctly and without particularity, and carry a servile aspect toward the discourse which they are brought in to make good.

But this difference is not amiss to be remembered, that as history of Times is the best ground for discourse of government, such as Machiavel handleth, so histories of Lives is the most proper for discourse of business, as [302] more conversant in private actions. Nay there is a ground of discourse for this purpose fitter than them both, which is *discourse upon letters*, such as are wise and weighty, as many are of Cicero *ad Atticum* and others. For letters have a great [303] and more particular representation of business than either Chronicles or Lives. Thus have we spoken both of the matter and form of this part of civil knowledge touching Negotiation [304], which we note to be deficient.

But yet there is another part of this part, which differeth as much from that whereof we have spoken as *sapere* and *sibi sapere* [*to be wise* and *to be wise for oneself*], the one moving as it were to the circumference, the other to the centre. For there is a wisdom of counsel, and again there is a wisdom of pressing a man's own fortune; and they do sometimes meet, and often sever. For many are wise in their own ways that are weak for government or counsel; like ants, which is a wise creature for itself, but very hurtful for the garden. This wisdom the Romans did take much knowledge of [305]: *Nam pol sapiens* (saith the comical poet) *fingit fortunam sibi* [the wise man fashions his fortune for himself]; and it grew to an adage, *Faber quisque fortunæ propriæ* [every man has tools to make his own fortune with], and Livy attributeth it to Cato the first, *In hoc viro tanta vis animi et ingenii inerat, ut quocunque loco natus esset, sibi ipse fortunam facturus videretur*, [such was his force of mind and genius that in whatever state he had been born he would have made himself a fortune].

This conceit or position [306] if it be too much declared and professed, hath been thought a thing impolitic and unlucky; as was observed in Timotheus the Athenian; who having done many great services to the estate in his government, and giving an account thereof to the people as the manner was, did conclude every particular with this clause, and in this fortune had no part. And it came so to pass that he never prospered in any thing he took in hand afterward: for this is too high and too arrogant, savouring of that which Ezekiel saith of Pharaoh, *Dicis, Fluvius est meus, et ego feci memet ipsum* [thou sayest the river is mine, and I made myself]; or of that which another prophet speaketh, that men offer sacrifices to their nets and snares; and that which the poet expresseth,

> Dextra mihi Deus, et telum quod missile [307] libro,
> Nunc adsint!

[301] So edd. 1629 and 1633. The original has *gaine*. I doubt whether *action* be the right word, and should rather suspect *aime*, which might look very like *gaine* if the tail of a letter from the line above happened to strike through the *a*. The translation has *unde fit loco exemplaris ad imitationem et practicam*.

[302] *is* both in orig. and in edd. 1629 and 1633. Blackbourne substituted *because it is*. Instead of "private actions", the translation substitutes "actions of all kinds great and small"—(*quoniam omnem occasionum et negotiorum, tam grandium quam leviorum, varietatem complectuntur*).

[303] So all three editions, though *great* can hardly be the right word. I should suspect *nearer*. The translation has *magis in proximo et ad vivum negotia solent repræsentare*.

[304] i.e. *de negotiis sparsis*.

[305] And yet (he adds in the translation) there were no better patriots,—*licet patriæ optimis curatoribus*.

[306] The translation has *hoc genus prudentiæ*.

[307] *inutile* in the original, and also in ed. 1633: obviously a misprint. Ed. 1629 and the *De Augmentis* have it right.

In addition to these instances he cites in the translation another from Julius Cæsar himself. When the soothsayer reported the auspices unfavourable, he was heard to mutter "they will be more favourable when I will". The anecdote comes from Suetonius. It was the only occasion (Bacon adds) on which Cæsar so far forgot himself as to betray

[my right hand and my spear are the God I trust in]. For these confidences were ever unhallowed, and unblessed. And therefore those that were great politiques indeed ever ascribed their successes to their felicity, and not to their skill or virtue. For so Sylla surnamed himself *Felix*, not *Magnus* [the Fortunate, not the Great]. So Cæsar said [308] to the master of the ship, *Cæsarem portas et fortunam ejus* [you carry Cæsar and his fortune].

But yet nevertheless these positions, *Faber quisque fortunæ suæ ; Sapiens dominabitur astris ; Invia virtuti nulla est via* [every man should be the maker of his own fortune; the wise man will command his stars; nothing impossible to virtue]: and the like, being taken and used as spurs to industry, and not as stirrups to insolency, rather for resolution than for presumption or outward declaration, have been ever thought sound and good, and are no question imprinted in the greatest minds; who are so sensible of this opinion as they can scarce contain it within. As we see in Augustus Cæsar, (who was rather diverse from his uncle than inferior in virtue [309]), how when he died, he desired his friends about him to give him a *Plaudite ;* as if he were conscient to himself that he had played his part well upon the stage. This part of knowledge we do report also as deficient: not but that it is practised too much, but it hath not been reduced to writing. And therefore lest it should seem to any that it is not comprehensible by axiom, it is requisite, as we did in the former, that we set down some heads or passages of it.

Faber Fortunæ, sive de Ambitu vitæ

Wherein it may appear at the first a new and unwonted argument to teach men how to raise and make their fortune; a doctrine wherein every man perchance will be ready to yield himself a disciple, till he see the difficulty: for Fortune layeth as heavy impositions as Virtue; and it is as hard and severe a thing to be a true politique, as to be truly moral. But the handling hereof concerneth learning greatly, both in honour and in substance: in honour, because pragmatical men may not go away with an opinion that learning is like a lark that can mount and sing and please herself, and nothing else; but may know that she holdeth as well of the hawk, that can soar aloft, and can also descend and strike upon the prey: in substance, because it is the perfect law of inquiry of truth, *that nothing be in the globe of matter, which should not be likewise in the globe of crystal, or form ;* that is that there be not anything in being and action, which should not be drawn and collected into contemplation and doctrine. Neither doth learning admire or esteem of this architecture of fortune otherwise than as of an inferior work: for no man's fortune can be an end worthy of his being, and many times the worthiest men do abandon their fortune willingly for better respects: but nevertheless fortune as an organ of virtue and merit deserveth the consideration.

First therefore the precept which I conceive to be most summary towards the prevailing in fortune, is to obtain that window which Momus did require, who seeing in the frame of man's heart such angles and recesses, found fault there was not a window to look into them; that is, to procure good informations of particulars touching persons, their natures, their desires and ends, their customs and fashions, their helps and advantages, and whereby they chiefly stand; so again their weaknesses and disadvantages, and where they lie most open and obnoxious; their friends, factions, dependances; and again their opposites, enviers, competitors, their moods and times, *Sola viri molies aditus et tempora noras ;* their principles, rules, and observations, and the like: and this not only of persons, but of actions; what are on foot from time to time, and how they are conducted, favoured, opposed; and how they import, and the like. For the

his secret thoughts—(*nunquam, quod memini, impotentiam cogitationum suarum arcanarum prodidit nisi simili dicto*); and his death followed soon after.

[308] better (adds the translation) than in the instance above mentioned.

[309] *sed vir certe paulo moderatior.* In Bacon's character of Augustus—the fragment entitled *Imago Civilis Augusti Cæsaris*—he acknowledges that he was inferior to Julius in strength of mind, but asserts that he was superior in beauty and health of mind; Julius's aspirations being restless, boundless, and inordinate; those of Augustus sober, well ordered, and within compass.

knowledge of present actions is not only material in itself, but without it also the knowledge of persons is very erroneous: for men change with the actions; and whiles they are in pursuit they are one, and when they return to their nature they are another. These informations of particulars touching persons and actions are as the minor propositions in every active syllogism; for no excellency of observations (which are as the major propositions) can suffice to ground a conclusion, if there be error and mistaking in the minors.

That this knowledge is possible, Salomon is our surety; who saith, *Consilium in corde viri tanquam aqua profunda; sed vir prudens exhauriet illud* [counsel in the heart of man is like deep water; but a man of understanding will draw it out]. And although the knowledge itself falleth not under precept, because it is of individuals, yet the instructions for the obtaining of it may.

We will begin therefore with this precept, according to the ancient opinion, that the sinews of wisdom are slowness of belief and distrust; that more trust be given to countenances and deeds than to words; and in words, rather to sudden passages and surprised words, than to set and purposed words. Neither let that be feared which is said, *fronti nulla fides* [no trusting to the face]: which is meant of a general outward behaviour, and not of the private and subtile motions and labours of the countenance and gesture; which as Q. Cicero elegantly saith, is *animi janua*, the gate of the mind. None more close than Tiberius, and yet Tacitus saith of Gallus, *Etenim vultu offensionem conjectaverat* [he had seen displeasure in his countenance]. So again, noting the differing character and manner of his commending Germanicus and Drusus in the senate, he saith touching his fashion wherein he carried his speech of Germanicus, thus: *Magis in speciem adornatis verbis, quam ut penitus sentire videretur* [it was in words too laboured and specious to be taken for what he really felt]; but of Drusus thus; *Paucioribus, sed intentior, et fida oratione* [he said less, but more earnestly, and in a style of sincerity]; and in another place, speaking of his character of speech when he did anything that was gracious and popular, he saith that in other things he was *velut eluctantium verborum* [of a kind of struggling speech]; but then again, *solutius loquebatur quando subveniret* [he spoke with more freedom when he was speaking in a man's favour]. So that there is no such artificer of dissimulation, nor no such commanded countenance (*vultus jussus*) that can sever from a feigned tale some of these fashions, either a more slight and careless fashion, or more set and formal, or more tedious and wandering, or coming from a man more drily and hardly.

Neither are *deeds* such assured pledges, as that they may be trusted without a judicious consideration of their magnitude and nature: *Fraus sibi in parvis fidem præstruit, ut majore emolumento fallat* [it is a trick of treachery to win itself credit at the first by fidelity in small things, that being thereupon trusted in greater it may deceive with more advantage]; and the Italian thinketh himself upon the point to be bought and sold, when he is better used than he was wont to be without manifest cause. For small favours, they do but lull men asleep, both as to caution and as to industry, and are as Demosthenes calleth them, *Alimenta socordiæ* [sops to feed sloth]. So again we see how false the nature of some deeds are, in that particular which Mutianus practised upon Antonius Primus, upon that hollow and unfaithful reconcilement which was made between them; whereupon Mutianus advanced many of the friends of Antonius: *simul amicis ejus præfecturas et tribunatus largitur* [making them prefects and tribunes]: wherein under pretence to strengthen him, he did desolate him, and won from him his dependances.

As for *words*, (though they be like waters to physicians, full of flattery and uncertainty), yet they are not to be despised, specially with the advantage of passion and affection. For so we see Tiberius upon a stinging and incensing speech of Agrippina came a step forth of his dissimulation, when he said, *You are hurt because you do not reign;* of which Tacitus saith, *Audita hæc raram occulti pectoris vocem elicuere; correptamque Græco versu admonuit, ideo lædi quia non regnaret*, [these words drew from Tiberius the voice, so rarely heard, of his secret heart: he retorted upon her with a Greek verse, that she was hurt, etc.]. And

therefore the poet doth elegantly call passions tortures, that urge men to confess their secrets :

Vino tortus et ira.

And experience sheweth, there are few men so true to themselves and so settled, but that, sometimes upon heat, sometimes upon bravery, sometimes upon kindness, sometimes upon trouble of mind and weakness, they open themselves ; specially if they be put to it with a counter-dissimulation, according to the proverb of Spain, *Di mentira, y sacaras verdad, Tell a lie and find a truth.*

As for the knowing of men which is at second hand from reports ; men's weaknesses [310] and faults are best known from their enemies, their virtues and abilities from their friends, their customs and times from their servants, their conceits and opinions from their familiar friends with whom they discourse most. General fame is light, and the opinions conceived by superiors or equals [311] are deceitful ; for to such men are more masked : *Verior fama e domesticis emanat* [the truer kind of report comes from those who see them at home].

But the soundest disclosing and expounding of men is by their natures and ends ; wherein the weakest sort of men are best interpreted by their natures and the wisest by their ends [312]. For it was both pleasantly and wisely said (though I think very untruly) by a nuncio of the pope, returning from a certain nation where he served as lieger ; whose opinion being asked touching the appointment of one to go in his place, he wished that in any case they did not send one that was too wise ; because no very wise man would ever imagine what they in that country were like to do. And certainly it is an error frequent for men to shoot over, and to suppose deeper ends and more compass reaches than are : the Italian proverb being elegant, and for the most part true :

Di danari, di senno, e di fede,
Cè nè manco che non credi :

There is commonly less money, less wisdom, and less good faith, than men do account upon.

But Princes upon a far other reason are best interpreted by their natures, and private persons by their ends ; for princes being at the top of human desires, they have for the most part no particular ends whereto they aspire [313], by distance from which a man might take measure and scale of the rest of their actions and desires ; which is one of the causes that maketh their hearts more inscrutable [314]. Neither is it sufficient to inform ourselves in men's ends and natures of the variety of them only, but also of the predominancy, what humour reigneth most, and what end is principally sought. For so we see, when Tigellinus saw himself outstripped by Petronius Turpilianus in Nero's humours of pleasures, *metus ejus rimatur* [315], he wrought upon Nero's fears, whereby he brake the other's neck.

But to all this part of inquiry the most compendious way resteth in three things. The first, to have general acquaintance and inwardness with those which have general acquaintance and look most into the world ; and specially according to the diversity of business and the diversity of persons, to have privacy and conversation with some one friend at least which is perfect and well intelligenced in every several kind. The second is to keep a good mediocrity in liberty of speech and secrecy ; in most things liberty ; secrecy where it im-

[310] So ed. 1633. The original and ed. 1629 have *weaknesse.*

[311] The translation omits *equals :* a correction no doubt of Bacon's own.

[312] According to the translation, the weaker *and the more simple* by their natures ; the wiser *and the more close* by their ends.

[313] *i.e.* not earnestly and constantly—(*ad quos, præsertim vehementer et constanter, aspirent*).

[314] Whereas private persons are almost all like travellers making for their journey's end ; and if you know what they are aiming at, you may guess by that what they are likely to do and what not to do.

[315] So edd. 1629 and 1633. The original has *rinaeur.*

porteth; for liberty of speech inviteth and provoketh liberty to be used again, and so bringeth much to a man's knowledge; and secrecy, on the other side, induceth trust and inwardness. The last is the reducing of a man's self to this watchful and serene habit, as to make account and purpose, in every conference and action, as well to observe as to act. For as Epictetus would have a philosopher in every particular action to say to himself, *Et hoc volo, et etiam institutum servare* [I would do this and keep my course too]; so a politic man in every thing should say to himself, *Et hoc volo, ac etiam aliquid addiscere* [I would do it and also learn something from it[316]]. I have stayed the longer upon this precept of obtaining good information, because it is a main part by itself, which answereth to all the rest. But, above all things, caution must be taken that men have a good stay and hold of themselves, and that this much knowledge do not draw on much meddling; for nothing is more unfortunate than light and rash intermeddling in many matters; so that this variety of knowledge tendeth in conclusion but only to this, to make a better and freer choice of those actions which may concern us, and to conduct them with the less error and the more dexterity.

The second precept concerning this knowledge is, for men to take good information touching their own person, and well to understand themselves; knowing that, as St. James saith, though men look oft in a glass, yet they do suddenly forget themselves; wherein as the divine glass is the word of God, so the politic glass is the state of the world or times wherein we live, in the which we are to behold ourselves.

For men ought to take an unpartial view of their own abilities and virtues; and again of their wants and impediments; accounting these with the most, and those other with the least; and from this view and examination to frame the considerations following.

First, to consider how the constitution of their nature sorteth with the general state of the times; which if they find agreeable and fit, then in all things to give themselves more scope and liberty; but if differing and dissonant, then in the whole course of their life to be more close, retired, and reserved: as we see in Tiberius, who was never seen at a play and came not into the senate in twelve of his last years; whereas Augustus Cæsar lived ever in men's eyes, which Tacitus observeth: *Alia Tiberio morum via* [Tiberius's ways were different[317]].

Secondly, to consider how their nature sorteth with professions and courses of life, and accordingly to make election, if they be free; and, if engaged, to make the departure at the first opportunity: as we see was done by duke Valentine, that was designed by his father to a sacerdotal profession, but quitted it soon after in regard of his parts and inclination; being such nevertheless, as a man cannot tell well whether they were worse for a prince or for a priest.

Thirdly to consider how they sort with those whom they are like to have competitors and concurrents, and to take that course wherein there is most solitude, and themselves like to be most eminent: as Cæsar Julius did, who at first was an orator or pleader; but when he saw the excellency of Cicero, Hortensius, Catulus, and others, for eloquence, and saw there was no man of reputation for the wars but Pompeius, upon whom the state was forced to rely, he forsook his course begun toward a civil and popular greatness, and transferred his designs to a martial greatness.

Fourthly, in the choice of their friends and dependances, to proceed according to the composition of their own nature; as we may see in Cæsar, all whose friends and followers were men active and effectual, but not solemn or of reputation[318].

[316] *i.e.* something which may be of use hereafter. And therefore (adds the translation) those who are so intent on the business in hand that, like Montaigne, they pay no attention to anything that turns up by the way, make excellent ministers for Kings and Commonwealths, but bad managers of their own fortune.

[317] In the translation Pericles is mentioned as another instance—(*eadem et Periclis ratio fuit*).

[318] And men (the translation adds) who were infinitely loyal to Cæsar himself, but arrogant and contemptuous towards all men else; such as Antonius, Hirtius, Pansa, Oppius, Balbus, Dolabella, Pollio, and the rest.

Fifthly, to take special heed how they guide themselves by examples, in thinking they can do as they see others do ; whereas perhaps their natures and carriages are far differing ; in which error it seemeth Pompey was, of whom Cicero saith, that he was wont often to say, *Sylla potuit, ego non potero ?* [Sylla could do it, why not I ?] wherein he was much abused, the natures and proceedings of himself and his example being the unlikest in the world ; the one being fierce, violent, and pressing the fact ; the other solemn, and full of majesty and circumstance, and therefore the less effectual.

But this precept touching the politic knowledge of ourselves hath many other branches whereupon we cannot insist.

Next to the well understanding and discerning of a man's self, there followeth the well opening and revealing [319] a man's self ; wherein we see nothing more usual than for the more able man to make the less shew. For there is a great advantage in the well setting forth of a man's virtues, fortunes, merits ; and again in the artificial covering of a man's weaknesses, defects, disgraces ; staying upon the one, sliding from the other ; cherishing the one by circumstances, gracing the other by exposition, and the like : wherein we see that Tacitus saith of Mutianus, who was the greatest politique of his time, *Omnium quæ dixerat feceratque arte quâdam ostentator* [having a certain art of displaying to advantage all he said and did] ; which requireth indeed some art, lest it turn tedious and arrogant ; but yet so as ostentation (though it be to the first degree of vanity) seemeth to me rather a vice in manners than in policy : for as it is said, *Audacter calumniare* [320], *semper aliquid hæret* [slander boldly, there is ever some that sticks] ; so, except it be in a ridiculous degree of deformity, *Audacter te vendita, semper aliquid hæret* [put forward your own pretensions boldly—something always sticks]. For it will stick with the more ignorant and inferior sort of men, though men of wisdom and rank do smile at it and despise it ; and yet the authority won with many doth countervail the disdain of a few. But if it be carried with decency and government, as with a natural, pleasant, and ingenious [321] fashion ; or at times when it is mixed with some peril and unsafety, (as in military persons) ; or at times when others are most envied ; or with easy and careless passage to it and from it, without dwelling too long or being too serious ; or with an equal freedom of taxing a man's self as well as gracing himself ; or by occasion of repelling or putting down others' injury or insolency ; it doth greatly add to reputation ; and surely not a few solid natures, that want this ventosity and cannot sail in the height of the winds, are not without some prejudice and disadvantage by their moderation.

But for these flourishes and enhancements of virtue, as they are not perchance unnecessary, so it is at least necessary that virtue be not disvalued and imbased under the just price ; which is done in three manners : by offering and obtruding a man's self ; wherein men think he is rewarded, when he is accepted : by doing too much [322] ; which will not give that which is well done leave to settle, and in the end induceth satiety : and by finding too soon the fruit of a man's virtue, in commendation, applause, honour, favour ; wherein if a man be pleased with a little, let him hear what is truly said, *Cave ne insuetus rebus majoribus videaris, si hæc te res parva sicuti magna delectat* [if he take so much delight in a little thing, he will be thought unused to greater things].

But the covering of defects is of no less importance than the valuing of good parts ; which may be done likewise in three manners ; by Caution, by Colour, and by Confidence. Caution is when men do ingeniously and discreetly avoid to be put into those things for which they are not proper : whereas contrariwise bold

[319] In the translation this part of the subject is distributed into three separate heads ; —the art of setting a man's self forth to advantage (*se ostentare*)—of making himself understood (*se declarare*)—of turning and shaping himself according to occasion (*flectere se et effingere*) ; and the order of the precepts which follow is changed to suit this arrangement. The three next paragraphs belong to the first head,—the art of ostentation.

[320] *calumniari* in the original. [321] *i.e.* ingenuous.

[322] Especially in the beginning, and at once—(*quando quis in principio rei gerendæ viribus suis nimium abutitur, et quod sensim erat præstandum uno impetu effundit*).

and unquiet spirits will thrust themselves into matters without difference, and so publish and proclaim all their wants. Colour is when men make a way for themselves to have a construction made of their faults or wants as proceeding from a better cause, or intended for some other purpose: for of the one it is well said, *Sæpe latet vitium proximitate boni* [a vice will often hide itself under the shadow of a neighbouring virtue]; and therefore whatsoever want a man hath, he must see that he pretend the virtue that shadoweth it; as if he be dull, he must affect gravity; if a coward, mildness; and so the rest: for the second, a man must frame some probable cause why he should not do his best, and why he should dissemble his abilities; and for that purpose must use to dissemble those abilities which are notorious in him [323], to give colour that his true wants are but industries and dissimulations. For Confidence, it is the last [324] but the surest remedy; namely, to depress and seem to despise whatsoever a man cannot attain; observing the good [325] principle of the merchants, who endeavour to raise the price of their own commodities, and to beat down the price of others. But there is a confidence that passeth [326] this other; which is, to face out a man's own defects, in seeming to conceive that he is best in those things wherein he is failing; and, to help that again, to seem on the other side that he hath least opinion of himself in those things wherein he is best: like as we shall see it commonly in poets, that if they shew their verses, and you except to any, they will say *that that line cost them more labour than any of the rest;* and presently will seem to disable and suspect rather some other line, which they know well enough to be the best in the number. But above all, in this righting and helping of a man's self in his own carriage, he must take heed he shew not himself dismantled and exposed to scorn and injury, by too much dulceness, goodness, and facility of nature, but shew some sparkles of liberty, spirit, and edge: which kind of fortified carriage, with a ready rescuing [327] of a man's self from scorns, is sometimes of necessity imposed upon men by somewhat in their person or fortune [328]; but it ever succeedeth with good felicity [329].

Another precept of this knowledge is, by all possible endeavour to frame the mind to be pliant and obedient to occasion; for nothing hindereth men's fortunes so much as this *Idem manebat neque idem decebat* [continuing the same when the same is no longer fit]; men are where they were, when occasions turn: and therefore to Cato, whom Livy maketh such an architect of fortune, he addeth that he had *versatile ingenium* [a wit that could turn well]. And thereof it cometh that these grave solemn wits, which must be like themselves and cannot make departures, have more dignity than felicity. But in some it is nature to be somewhat viscous and inwrapped, and not easy to turn. In some it is a conceit that is almost a nature, which is, that men can hardly make themselves believe that they ought to change their course, when they have found good by it in former experience. For Machiavel noteth wisely, how Fabius Maximus

[323] This clause is omitted in the translation; which says only *ut quod non possimus nolle videamur*).

[324] Meaning, I think, the least worthy—the last to be resorted to. The translation has *impudens certe est remedium, sed tamen* etc.

[325] *i.e.* prudent—*mercatorum prudentium more, quibus solenne est et proprium, ut* etc.

[326] *i.e.* in impudence—(*hoc ipso impudentius*).

[327] So ed. 1633. The original and ed. 1629 have *resussing*.

[328] As in the case of deformed persons, and bastards, and persons disgraced—(*veluti fit in deformibus, et spuriis, et ignominia aliqua mulctatis*).

[329] According to the arrangement adopted in the translation, the observations on the first head—the art of ostentation—end here; and the art of *declaration*, that is of making oneself understood, is next handled. The substance of the remarks on this head will be found in the next page, in the paragraph beginning "Another part of this knowledge is the observing a good mediocrity", etc. Then follows the paragraph which stands next in the text; which refers to the third head,—*quod ad animum flectendum et effingendum attinet*. And with this he concludes what he has to say of "the two *summary* precepts concerning the architecture of Fortune". The rest he gives as a sample of particular precepts (*præcepta sparsa*) on the same subject.

would have been temporizing still, according to his old bias, when the nature of the war was altered and required hot pursuit. In some other it is want of point and penetration in their judgment, that they do not discern when things have a period, but come in too late after the occasion; as Demosthenes compareth the people of Athens to country fellows when they play in a fence school, that if they have a blow, then they remove their weapon to that ward, and not before. In some other it is a lothness to leese labours passed, and a conceit that they can bring about occasions to their ply[330]; and yet in the end, when they see no other remedy, then they come to it with disadvantage; as Tarquinius, that gave for the third part of Sibylla's books the treble price, when he might at first have had all three for the simple. But from whatsoever root or cause this restiveness of mind proceedeth, it is a thing most prejudicial; and nothing is more politic than to make the wheels of our mind concentric and voluble with the wheels of fortune.

[331] Another precept of this knowledge, which hath some affinity with that we ast spake of, but with difference, is that which is well expressed, *Fatis accede Deisque* [take the way which the Fates and the Gods offer]; that men do not only turn with the occasions but also run with the occasions, and not strain their credit or strength to over hard or extreme points, but choose in their actions that which is most passable: for this will preserve men from foil, not occupy them too much about one matter, win opinion of moderation, please the most[332], and make a shew of a perpetual felicity in all they undertake; which cannot but mightily increase reputation.

Another part of this knowledge seemeth to have some repugnancy with the former two, but not as I understand it; and it is that which Demosthenes uttereth in high terms; *Et quemadmodum receptum est, ut exercitum ducat imperator, sic et a cordatis viris res ipsæ ducendæ; ut quæ ipsis videntur, ea gerantur, et non ipsi eventus persequi cogantur* [as the captain leads the army, so should wise men lead affairs; they should get that done which they think good to be done, and not be forced to follow at the heels of events]. For if we observe, we shall find two differing kinds of sufficiency in managing of business: some can make use of occasions aptly and dexterously, but plot little; some can urge and pursue their own plots well, but cannot accommodate nor take in[333]; either of which is very unperfect without the other.

Another part of this knowledge is the observing a good mediocrity in the declaring or not declaring a man's self: for although depth of secrecy, and making way *qualis est via navis in mari* [like the way of a ship through the water], (which the French calleth *sourdes menées*, when men set things in work without opening themselves at all), be sometimes both prosperous and admirable; yet many times *Dissimulatio errores parit qui dissimulatorem ipsum illaqueant* [dissimulation breeds mistakes in which the dissembler himself is caught]. And therefore we see the greatest politiques have in a natural and free manner professed their desires, rather than been reserved and disguised in them. For so we see that Lucius Sylla made a kind of profession, *that he wished all men happy or unhappy as they stood his friends or enemies.* So Cæsar, when he went first into Gaul, made no scruple to profess *that he had rather be first in a village than second at Rome.* So again as soon as he had begun the war, we see what Cicero saith of

[330] The rest of this sentence is omitted in the translation.

[331] This, in the translation, stands as the second of the *præcepta sparsa*; that of accustoming the mind to value things according as they conduce to our particular ends being placed first. Throughout this part of the work the meaning is expressed more fully and clearly in the Latin, but where no material alteration or addition is introduced, and where the meaning of the English is plain enough, I do not stay to point out the differences.

[332] That is, I suppose, by bringing us less into collision with them—(*pauciores offendemus*).

[333] So in all three editions, though the sentence seems to be imperfect. The meaning must be that they cannot seize and turn to advantage accidents which fall out unexpectedly in their favour. The translation has *alii toti sunt in machinando, qui occasiones quæ opportune incidunt non arripiunt.*

him ; *Alter* (meaning of Cæsar) *non recusat, sed quodammodo postulat, ut* (*ut est*) *sic appelletur tyrannus* [he does not refuse, but in a manner demands, to be called what he is—tyrant]. So we may see in a letter of Cicero to Atticus, that Augustus Cæsar in his very entrance into affairs, when he was a dearling of the senate, yet in his harangues to the people would swear *Ita parentis honores consequi liceat*, [as I hope to attain my father's honours] ; which was no less than the tyranny, save that, to help it, he would stretch forth his hand towards a statua of Cæsar's that was erected in the place : and [334] men laughed and wondered and said Is it possible ? or Did you ever hear the like [335] ? and yet thought [336] he meant no hurt, he did it [337] so handsomely and ingenuously. And all these were prosperous : whereas Pompey, who tended to the same end but in a more dark and dissembling manner, as Tacitus saith of him, *Occultior non melior* [having his intentions better concealed but not better], wherein Sallust concurreth, *ore probo, animo inverecundo* [an honest tongue but a shameless mind], made it his design by infinite secret engines to cast the state into an absolute anarchy and confusion, that the state might cast itself into his arms for necessity and protection, and so the sovereign power be put upon him, and he never seen in it : and when he had brought it (as he thought) to that point, when he was chosen consul alone, as never any was, yet he could make no great matter of it, because men understood him not ; but was fain in the end to go the beaten track of getting arms into his hands, by colour of the doubt of Cæsar's designs : so tedious, casual, and unfortunate are these deep dissimulations ; whereof it seemeth Tacitus made this judgment, that they were a cunning of an inferior form in regard of true policy ; attributing the one to Augustus, the other to Tiberius, where speaking of Livia he saith, *Et cum artibus mariti simulatione filii bene composita* [that she was of a happy composition, uniting the arts of her husband with the dissimulation of her son] ; for surely the continual habit of dissimulation is but a weak and sluggish cunning, and not greatly politic.

Another precept of this Architecture of Fortune is to accustom our minds to judge of the proportion or value of things as they conduce and are material to our particular ends ; and that to do substantially, and not superficially. For we shall find the logical part (as I may term it) of some men's minds good, but the mathematical part erroneous ; that is, they can well judge of consequences, but not of proportions and comparison [338] ; preferring things of shew and sense before things of substance and effect. So some fall in love with access to princes, others with popular fame and applause, supposing they are things of great pur chase ; when in many cases they are but matters of envy, peril, and impediment. So some measure things according to the labour and difficulty or assiduity which are spent about them ; and think if they be ever moving, that they must needs advance and proceed ; as Cæsar saith in a despising manner of Cato the second, when he describeth how laborious and indefatigable he was to no great purpose ; *Hæc omnia magno studio agebat.* So in most things men are ready to abuse themselves in thinking the greatest means [339] to be best, when it should be the fittest.

As for the true marshalling of men's pursuits towards their fortune as they are more or less material, I hold them to stand thus. First the amendment of their own minds ; for the remove of the impediments of the mind will sooner clear the passages of fortune, than the obtaining fortune will remove the impediments of the mind. In the second place I set down wealth and means ; which I know most men would have placed first, because of the general use which it beareth towards all variety of occasions. But that opinion I may condemn with like reason as Machiavel doth that other, that moneys were the sinews of the wars ; whereas (saith he) the true sinews of the wars are the sinews of men's

[334] So the original ; edd. 1629 and 1633 have *whereat many men.*

[335] So the original ; edd. 1629 and 1633 have *like to this.* [336] *though* in orig.

[337] *i.e.* he seemed to say what he felt—(*nihil malitiæ in eo suspicabantur qui tam candide et ingenue quid sentiret loqueretur*).

[338] *De* pretiis *vero imperitissime.*—De Aug.

[339] *i.e.* the greatest persons used as means—(*si magni alicujus aut honorati viri operâ utantur*).

arms, that is, a valiant, populous, and military nation; and he voucheth aptly the authority of Solon, who when Crœsus shewed him his treasury of gold said to him, that if another came that had better iron he would be master of his gold. In like manner it may be truly affirmed that it is not moneys that are the sinews of fortune, but it is the sinews and steel of men's minds, wit, courage, audacity, resolution, temper, industry, and the like. In third [340] place I set down reputation, because of the peremptory tides and currents it hath; which if they be not taken in their due time are seldom recovered, it being extremely hard to play an after-game of reputation. And lastly I place honour, which is more easily won by any of the other three, much more by all, than any of them can be purchased by honour. To conclude this precept, as there is order and priority in matter, so is there in time, the preposterous placing whereof is one of the commonest errors; while men fly to their ends when they should intend their beginnings, and do not take things in order of time as they come on, but marshal them according to greatness and not according to instance; not observing the good precept, *Quod nunc instat agamus*

[Despatch we now what stands us now upon].

Another precept of this knowledge is, not to embrace any matters which do occupy too great a quantity of time, but to have that sounding in a man's ears, *Sed fugit interea, fugit irreparabile tempus* [while he is making ready to do it the time for doing it is gone]; and that is the cause why those which take their course of rising by professions of burden, as lawyers, orators, painful divines, and the like, are not commonly so politic for their own fortune [341], otherwise than in their ordinary way, because they want time to learn particulars, to wait occasions, and to devise plots [342].

Another precept of this knowledge is to imitate nature which doth nothing in vain; which surely a man may do, if he do well interlace his business, and bend not his mind too much upon that which he principally intendeth [343]. For a man ought in every particular action so to carry the motions of his mind, and so to have one thing under another, as if he cannot have that he seeketh in the best degree, yet to have it in a second, or so in a third; and if he can have no part of that which he purposed, yet to turn the use of it to somewhat else [344]; and if he cannot make anything of it for the present, yet to make it as a seed of somewhat in time to come; and if he can contrive no effect or substance from it, yet to win some good opinion by it, or the like; so that he should exact an account [345] of himself, of every action to reap somewhat, and not to stand amazed and confused if he fail of that he chiefly meant: for nothing is more impolitic than to mind actions wholly one by one; for he that doth so leeseth infinite occasions which intervene, and are many times more proper and propitious for somewhat that he shall need afterwards, than for that which he urgeth for the present; and therefore men must be perfect in that rule, *Hæc oportet facere, et illa non omittere* [these things ought ye to do, and not to leave the other undone].

Another precept of this knowledge is, not to engage a man's self peremptorily in any thing, though it seem not liable to accident; but ever to have a window to fly out at, or a way to retire [346]; following the wisdom in the ancient fable of the two frogs, which consulted when their plash was dry whither they should go; and the one moved to go down into a pit, because it was not likely the water

[340] So the original and ed. 1629. Ed. 1633 has *the third*.

[341] So the original. Edd. 1629 and 1633 have *fortunes*.

[342] Whereas (he adds in the translation) you will find in courts and commonwealths that the best promoters of their own fortune are those who have no public duty to discharge, and make their own rising their only business.

[343] This last clause is omitted in the translation.

[344] *i.e.* to turn his labour taken therein to some other use—(*ad alium quempiam præter destinatum finem operam impensam flectamus*).

[345] So the original. Edd. 1629 and 1633 omit *an*.

[346] The rest of this paragraph is omitted in the translation.

would dry there ; but the other answered, *True, but if it do, how shall we get out again ?*

Another precept of this knowledge is that ancient precept of Bias, construed not to any point of perfidiousness but only to caution and moderation, *Et ama tanquam inimicus futurus, et odi tanquam amaturus* [love your friend as you would love one who may hereafter be your enemy ; hate your enemy as one who may hereafter be your friend] ; for it utterly betrayeth all utility for men to embark themselves too far in unfortunate friendships, troublesome spleens, and childish and humorous envies or emulations.

But I continue this beyond the measure of an example ; led, because I would not have such knowledges which I note as deficient to be thought things imaginative or in the air, or an observation or two much made of ; but things of bulk and mass, whereof an end is hardlier made than a beginning. It must be likewise conceived, that in these points which I mention and set down, they are far from complete tractates of them, but only as small pieces for patterns. And lastly, no man I suppose will think that I mean fortunes are not obtained without all this ado ; for I know they come tumbling into some men's laps ; and a number obtain good fortunes by diligence in a plain way, little intermeddling, and keeping themselves from gross errors.

But as Cicero, when he setteth down an Idea of a perfect Orator, doth not mean that every pleader should be such ; and so likewise, when a Prince or a Courtier hath been described by such as have handled those subjects, the mould hath used to be made according to the perfection of the art, and not according to common practice : so I understand it that it ought to be done in the description of a Politic man ; I mean politic for his own fortune.

But it must be remembered all this while, that the precepts which we have set down are of that kind which may be counted and called *bonæ artes* [honest arts]. As for evil arts, if a man would set down for himself that principle of Machiavel, *that a man seek not to attain virtue itself, but the appearance only thereof ; because the credit of virtue is a help, but the use of it is cumber ;* or that other of his principles, *that he presuppose that men are not fitly to be wrought otherwise but by fear, and therefore that he seek to have every man obnoxious, low, and in strait,* which the Italians call *seminar spine,* to sow thorns ; or that other principle contained in the verse which Cicero citeth, *Cadant amici, dummodo inimici intercidant* [down with friends so enemies go down with them], as the Triumvirs, which sold every-one to other the lives of their friends for the deaths of their enemies ; or that other protestation of L. Catilina, to set on fire and trouble states, to the end to fish in droumy waters, and to unwrap their fortunes ; *Ego si quid in fortunis meis excitatum sit incendium, id non aqua sed ruina restinguam,* [if my fortunes be set on fire I will put it out not with water but with demolition] : or that other principle of Lysander *that children are to be deceived with comfits, and men with oaths :* and the like evil and corrupt positions, whereof (as in all things) there are more in number than of the good : certainly with these dispensations from the laws of charity and integrity the pressing of a man's fortune may be more hasty and compendious. But it is in life as it is in ways ; the shortest way is commonly the foulest, and surely the fairer way is not much about.

But men if they be in their own power and do bear and sustain themselves and be not carried away with a whirlwind or tempest of ambition, ought in the pursuit of their own fortune to set before their eyes not only that general map of the world, that *all things are vanity and vexation of spirit,* but many other more particular cards and directions : chiefly that, that Being without well-being is a curse and the greater being the greater curse, and that all virtue is most rewarded and all wickedness most punished in itself : according as the poet saith excellently :

> Quæ vobis, quæ digna, viri, pro laudibus istis
> Præmia posse rear solvi ? pulcherrima primum
> Dii *moresque* dabunt vestri
> [What recompence, O friends, can I hold out
> Worthy such deeds ? The best is that ye have,—
> God's blessing and your proper nobleness] :

and so of the contrary. And secondly they ought to look up to the eternal providence and divine judgment, which often subverteth the wisdom of evil plots and imaginations, according to that Scripture, *He hath conceived mischief, and shall bring forth a vain thing.* And although men should refrain themselves from injury and evil arts, yet this incessant and sabbathless pursuit of a man's fortune leaveth not tribute which we owe to God of our time; who (we see) demandeth a tenth of our substance, and a seventh, which is more strict, of our time: and it is to small purpose to have an erected face towards heaven, and a perpetual grovelling spirit upon earth, eating dust as doth the serpent; *Atque affigit humo divinæ particulam auræ* [fixing to earth the ethereal spark divine]. And if any man flatter himself that he will employ his fortune well though he should obtain it ill, as was said concerning Augustus Cæsar, and after of Septimius Severus, *that either they should never have been born or else they should never have died,* they did so much mischief in the pursuit and ascent of their greatness, and so much good when they were established; yet these compensations and satisfactions are good to be used, but never good to be purposed. And lastly, it is not amiss for men in their race toward their fortune to cool themselves a little with that conceit which is elegantly expressed by the emperor Charles the Fifth in his instructions to the king his son, *that fortune hath somewhat of the nature of a woman, that if she be too much wooed she is the farther off.* But this last is but a remedy for those whose tastes are corrupted: let men rather build upon that foundation which is as a corner-stone of divinity and philosophy, wherein they join close, namely that same *Primum quærite.* For divinity saith, *Primum quærite regnum Dei, et ista omnia adjicientur vobis* [seek ye first the kingdom of God, and all these things shall be added unto you]: and philosophy saith, *Primum quærite bona animi, cætera aut aderunt aut non oberunt* seek ye first the good things of the mind, all other good things will either come or not be wanted]. And although the human foundation hath somewhat of the sand [347], as we see in M. Brutus when he brake forth into that speech,

Te colui, Virtus, ut rem; at tu nomen inane es

[I took thee, Virtue, for a reality, but I find thee an empty name]; yet the divine foundation is upon the rock. But this may serve for a taste of that knowledge which I noted as deficient.

¶ [348] Concerning Government, it is a part of knowledge secret and retired, in both these respects in which things are deemed secret; for some things are secrets because they are hard to know, and some because they are not fit to utter. We see all governments are obscure and invisible.

Totamque infusa per artus
Mens agitat molem, et magno se corpore miscet
[In every pore diffused the great mind works,
Stirs all the mass, and thro' the huge frame lives].

Such is the description of governments. We see the government of God over the world is hidden, insomuch as it seemeth to participate of much irregularity and confusion. The government of the Soul in moving the Body is inward and profound, and the passages thereof hardly to be reduced to demonstration.

[347] *same* in the original: *sands* in edd. 1629 and 1633.

[348] De Aug. viii. 3. The first part of this chapter is entirely altered in the translation; the remarks on the secret nature of Government, as a subject not proper for scrutiny, being omitted altogether; and the complimentary excuse for not entering upon it himself being transferred to the opening of the book. In this place indeed he speaks of it as a subject which his own long experience as an officer of state qualified him to handle, and on which he had some work in contemplation, though he thought it would be either abortive or posthumous; alluding probably to the *New Atlantis*, in which we know from Dr. Rawley that he did intend to exhibit a model of a perfect government. For the present however he confines himself to two treatises, given by way of example; one on the art of extending the bounds of Empire (which is a translation of the twenty-ninth Essay); the other on Universal Justice.

Again, the wisdom of antiquity (the shadows whereof are in the poets) in the description of torments and pains, next unto the crime of rebellion which was the Giants' offence, doth detest the offence of futility [349]; as in Sisyphus and Tantalus. But this was meant of particulars: nevertheless even unto the general rules and discourses of policy and government there is due a reverent and reserved handling.

But contrariwise in the governors toward the governed all things ought, as far as the frailty of man permitteth, to be manifest and revealed. For so it is expressed in the Scriptures touching the government of God, that this globe which seemeth to us a dark and shady body, is in the view of God as crystal: *Et in conspectu sedis tanquam mare vitreum simile crystallo* [and before the Throne there was a sea of glass, like unto crystal]. So unto princes and states, and specially towards wise senates and councils, the natures and dispositions of the people, their conditions and necessities, their factions and combinations, their animosities and discontents, ought to be, in regard of the variety of their intelligences, the wisdom of their observations, and the height of their station where they keep sentinel, in great part clear and transparent. Wherefore, considering that I write to a king that is a master of this science, and is so well assisted, I think it decent to pass over this part in silence, as willing to obtain the certificate which one of the ancient philosophers aspired unto; who being silent, when others contended to make demonstration of their abilities by speech, desired it might be certified for his part, *that there was one that knew how to hold his peace.*

Notwithstanding, for the more public part of government, which is Laws, I think good to note only one deficience; which is, that all those which have written of laws, have written either as philosophers or as lawyers, and none as statesmen. As for the philosophers, they make imaginary laws for imaginary commonwealths; and their discourses are as the stars, which give little light because they are so high. For the lawyers, they write according to the states where they live, what is received law, and not what ought to be law: for the wisdom of a lawmaker is one, and of a lawyer is another. For there are in nature certain fountains of justice, whence all civil laws are derived but as streams; and like as waters do take tinctures and tastes from the soils through which they run, so do civil laws vary according to the regions and governments where they are planted, though they proceed from the same fountains. Again, the wisdom of a lawmaker consisteth not only in a platform of justice, but in the application thereof; taking into consideration by what means laws may be made certain, and what are the causes and remedies of the doubtfulness and incertainty of law; by what means laws may be made apt and easy to be executed, and what are the impediments and remedies in the execution of laws; what influence laws touching private right of *meum* and *tuum* have into the public state, and how they may be made apt and agreeable; how laws are to be penned and delivered, whether in Texts or in Acts; brief or large; with preambles or without; how they are to be pruned and reformed from time to time; and what is the best means to keep them from being too vast in volumes or too full of multiplicity and crossness; how they are to be expounded, when upon causes emergent and judicially discussed, and when upon responses and conferences touching general points or questions; how they are to be pressed, rigorously or tenderly; how they are to be mitigated by equity and good conscience; and whether discretion and strict law are to be mingled in the same courts or kept apart in several courts; again, how the practice, profession, and erudition of law is to be censured and governed; and many other points touching the administration and (as I may term it) animation of laws. Upon which I insist the less, because I purpose (if God give me leave), having begun a work of this nature in aphorisms [350], to propound it hereafter, noting it in the mean time for deficient.

De prudentia legislatoria, sive de fontibus Juris.

And for your Majesty's laws of England, I could say much of their

[349] So edd. 1629 and 1633. The original has *facilitie*. By *futility* I understand *idle curiosity*.

[350] This was no doubt the treatise which is given by way of specimen in the *De Aug-*

dignity, and somewhat of their defect; but they cannot but excel the civil laws in fitness for the government; for the civil law was *non hos quæsitum munus in usus;* it was not made for the countries which it governeth. Hereof I cease to speak, because I will not intermingle matter of action with matter of general learning [351].

THUS have I concluded this portion of learning touching Civil Knowledge; and with Civil knowledge have concluded Human Philosophy; and with human philosophy, Philosophy in General. And being now at some pause, looking back into that I have passed through, this writing seemeth to me (*si nunquam fallit imago*) as far as a man can judge of his own work, not much better than that noise or sound which musicians make while they are tuning their instruments; which is nothing pleasant to hear, but yet is a cause why the music is sweeter afterwards. So have I been content to tune the instruments of the muses that they may play that have better hands. And surely, when I set before me the condition of these times, in which learning hath made her third visitation or circuit, in all the qualities thereof; as the excellency and vivacity of the wits of this age; the noble helps and lights which we have by the travails of ancient writers; the art of printing, which communicateth books to men of all fortunes; the openness of the world by navigation, which hath disclosed multitudes of experiments, and a mass of natural history; the leisure wherewith these times abound, not employing men so generally in civil business, as the states of Græcia did in respect of their popularity, and the state of Rome in respect of the greatness of their monarchy; the present disposition of these times at this instant to peace [352]; the consumption of all that ever can be said in controversies of religion, which have so much diverted men from other sciences; the perfection of your Majesty's learning, which as a phœnix may call whole vollies of wits to follow you; and the inseparable propriety of time, which is ever more and more to disclose truth; I cannot but be raised to this persuasion, that this third period of time will far surpass that of the Græcian and Roman learning: only if men will know their own strength and their own weakness both; and take one from the other light of invention, and not fire of contradiction; and esteem of the inquisition of truth as of an enterprise, and not as of a quality or ornament; and employ wit and magnificence to things of worth and excellency, and not to things vulgar and of popular estimation. As for my labours, if any man shall please himself or others in the reprehension of them, they shall make that ancient and patient request, *Verbera sed audi* [strike me if you will, only hear me]; let men reprehend them, so they observe and weigh them. For the appeal is (lawful though it may be it shall not be needful) from the first cogitations of men to their second, and from the nearer times to the times further off. Now let us come to that learning, which both the former times were not so blessed as to know, sacred and inspired Divinity, the Sabaoth and port of all men's labours and peregrinations.

¶ [353] THE prerogative of God extendeth as well to the reason as to the will of

mentis. The perfection of a law is there described as consisting in five things: it must be certain in its meaning; just in its rules; convenient in execution; agreeable to the form of government; and productive of virtue in the governed. Of these heads the first only is discussed; but under it almost all the points enumerated in the text come under consideration, more or less completely.

[351] This paragraph is omitted in the translation.

[352] This was written just after the conclusion of peace between England and Spain; when the translation was published the *disposition* of the times was less peaceable, but a greater part of Europe was actually at peace; and accordingly instead of the expression in the text he substitutes, "the peace which is at this time enjoyed by Britain, Spain, Italy, France too at last, and other regions not a few".

[353] De Aug. ix. 1. This chapter is greatly altered in the translation; much of it being entirely omitted, much condensed, and a little added. In the exordium he announces the subject of the book as one which does not belong to human reason and natural philo-

man; so that as we are to obey his law though we find a reluctation in our will, so we are to believe his word though we find a reluctation in our reason. For if we believe only that which is agreeable to our sense, we give consent to the matter and not to the author; which is no more than we would do towards a suspected and discredited witness; but that faith which was accounted to Abraham for righteousness was of such a point as whereat Sarah laughed, who therein was an image of natural reason.

Howbeit (if we will truly consider it) more worthy it is to believe than to know as we now know. For in knowledge man's mind suffereth from sense, but in belief it suffereth from spirit, such one as it holdeth for more authorised than itself [354], and so suffereth from the worthier agent. Otherwise it is of the state of man glorified; for then faith shall cease, and we shall know as we are known.

Wherefore we conclude that sacred Theology (which in our idiom we call Divinity) is grounded only upon the word and oracle of God, and not upon the light of nature: for it is written, *Cœli enarrant gloriam Dei* [the Heavens declare the glory of God], but it is not written, *Cœli enarrant voluntatem Dei* [the Heavens declare the will of God], but of that it is said, *Ad legem et testimonium: si non fecerint secundum verbum istud*, etc. [to the law and to the testimony: if they do not according to this word, etc.]. This holdeth not only in those points of faith which concern the great mysteries of the Deity, of the Creation, of the Redemption, but likewise those which concern the law moral truly interpreted: *Love your enemies: do good to them that hate you; be like to your heavenly Father, that suffereth his rain to fall upon the just and unjust.* To this it ought to be applauded, *Nec vox hominem sonat:* it is a voice beyond the light of nature. So we see the heathen poets, when they fall upon a libertine passion, do still expostulate with laws and moralities, as if they were opposite and malignant to nature: *Et quod natura remittit, invida jura negant* [what Nature suffers envious laws forbid]. So said Dendamis the Indian unto Alexander's messengers, That he had heard somewhat of Pythagoras and some other of the wise men of Græcia, and that he held them for excellent men: but that they had a fault, which was that they had in too great reverence and veneration a thing they called law and manners. So it must be confessed that a great part of the law moral is of that perfection, whereunto the light of nature cannot aspire. How then is it that man is said to have by the light and law of nature some notions and conceits of virtue and vice, justice and wrong, good and evil? Thus; because the light of nature is used in two several senses; the one, that which springeth from reason, sense, induction, argument, according to the laws of heaven and earth; the other, that which is imprinted upon the spirit of man by an inward instinct, according to the law of conscience, which is a sparkle of the purity of his first estate: in which later sense only he is participant of some light and discerning touching the perfection of the moral law: but how? sufficient to check the vice, but not to inform the duty. So then the doctrine of religion, as well moral as mystical, is not to be attained but by inspiration and revelation from God.

sophy. He will not therefore attempt to lay out the "partitions" of it, but merely offer a few suggestions, concerning not the matter revealed by Theology, but the manner of the revelation. These suggestions, which are but three in number, together with the remarks by which they are introduced, agree substantially with those in the text: all that does not bear immediately upon them being omitted. And I think all the differences may be sufficiently accounted for by the change of design; while the change of design itself may probably have been suggested by the difficulty of expounding the subject of theology on a scale similar to that adopted with regard to other subjects, without introducing matter which might have caused the work to be proscribed in Italy. See note p. 50.

[354] In the translation this is expressed rather differently. *In scientia enim* mens humana *patitur a sensu, qui a rebus materialis resilit; in fide autem* anima *patitur ab anima quæ est agens dignius:* Knowledge being (if I understand the meaning rightly) a function of the *anima sensibilis*, faith of the *anima rationalis;* the one receiving its impressions from things material, the other from things spiritual.

The use notwithstanding of reason in spiritual things, and the latitude thereof, is very great and general: for it is not for nothing that the apostle calleth religion *our reasonable service of God*; insomuch as the very ceremonies and figures of the old law were full of reason and signification, much more than the ceremonies of idolatry and magic, that are full of nonsignificants and surd characters. But most specially the Christian Faith, as in all things so in this, deserveth to be highly magnified; holding and preserving the golden mediocrity in this point between the law of the Heathen and the law of Mahomet, which have embraced the two extremes. For the religion of the Heathen had no constant belief or confession, but left all to the liberty of argument; and the religion of Mahomet on the other side interdicteth argument altogether: the one having the very face of error, and the other of imposture: whereas the Faith doth both admit and reject disputation with difference.

The use of human reason in religion is of two sorts: the former, in the conception and apprehension of the mysteries of God to us revealed; the other in the inferring and deriving of doctrine and direction thereupon. The former extendeth to the mysteries themselves; but how? by way of illustration, and not by way of argument. The later consisteth indeed of probation and argument. In the former we see God vouchsafeth to descend to our capacity, in the expressing of his mysteries in sort as may be sensible unto us; and doth grift [355] his revelations and holy doctrine upon the notions of our reason, and applieth his inspirations to open our understanding, as the form of the key to the ward of the lock [356]: for the later, there is allowed us an use of reason and argument secondary and respective, although not original and absolute. For after the articles and principles of religion are placed, and exempted from examination of reason, it is then permitted unto us to make derivations and inferences from and according to the analogy of them for our better direction. In nature this holdeth not; for both the principles are examinable by induction, though not by a medium or syllogism; and besides, those principles or first positions have no discordance with that reason which draweth down and deduceth the inferior positions. But yet it holdeth not in religion alone, but in many knowledges both of greater and smaller nature, namely wherein there are not only *posita* but *placita*; for in such there can be no use of absolute reason. We see it familiarly in games of wit, as chess, or the like; the draughts and first laws of the game are positive, but how? merely *ad placitum*, and not examinable by reason; but then how to direct our play thereupon with best advantage to win the game, is artificial and rational. So in human laws there be many grounds and maxims which are *placita juris*, positive upon authority and not upon reason, and therefore not to be disputed; but what is most just, not absolutely, but relatively and according to those maxims, that affordeth a long field of disputation. Such therefore is that secondary reason which hath place in divinity, which is grounded upon the *placets* of God.

De usu legitimo rationis humanæ in divinis.

Here therefore I note this deficience, that there hath not been to my understanding sufficiently inquired and handled *the true limits and use of reason in spiritual things*, as a kind of divine dialectic: which for that it is not done, it seemeth to me a thing usual, by pretext of true conceiving that which is revealed, to search and mine into that which is not revealed; and by pretext of enucleating inferences and contradictories, to examine that which is positive; the one sort falling into the error of Nicodemus, demanding to have things made more sensible than it pleaseth God to reveal them: *Quomodo possit homo nasci cum sit senex* [how can a man be born when he is old?]; the other sort into the error of the disciples

[355] So the original and ed. 1629. Ed. 1633 has *graft*.

[356] It being our own duty at the same time to open and enlarge our understanding that it may be capable of receiving them. *Qua tamen in parte nobis ipsis deesse minime debemus; cum enim Deus ipse opera rationis nostræ in illuminationibus suis utatur, etiam nos eandem in omnes partes versare debemus quo magis capaces simus ad mysteria recipienda et imbibenda: modo animus ad amplitudinem mysteriorum pro modulo suo dilatetur, non mysteria ad angustias animi constringantur.*

which were scandalized at a show of contradiction; *Quid est hoc quod dicit nobis? Modicum, et non videbitis me; et iterum, modicum, et videbitis me*, etc. [what is this that he saith unto us? a little while and ye shall not see me, and again a little while and ye shall see me, etc.].

Upon this I have insisted the more in regard of the great and blessed use thereof; for this point well laboured and defined of would in my judgment be an opiate to stay and bridle not only the vanity of curious speculations, wherewith the schools labour, but the fury of controversies, wherewith the church laboureth. For it cannot but open men's eyes, to see that many controversies do merely pertain to that which is either not revealed or positive; and that many others do grow upon weak and obscure inferences or derivations: which latter sort, if [357] men would revive the blessed style of that great doctor of the Gentiles, would be carried thus, *Ego, non Dominus* [I, not the Lord], and again, *Secundum consilium meum* [according to my counsel]; in opinions and counsels, and not in positions and oppositions. But men are now over-ready to usurp the style *Non ego, sed Dominus* [not I, but the Lord]; and not so only, but to bind it with the thunder and denunciation of curses and anathemas, to the terror of those which have not sufficiently learned out of Salomon that *the causeless curse shall not come* [358].

Divinity hath two principal parts; the matter informed or revealed, and the nature of the information or revelation: and with the later we will begin [359], because it hath most coherence with that which we have now last handled. The nature of the information consisteth of three branches; the limits of the information, the sufficiency of the information, and the acquiring or obtaining the information. Unto the limits of the information belong these considerations; how far forth particular persons continue to be inspired; how far forth the church is inspired; and how far forth reason may be used: the last point whereof I have noted as deficient. Unto the sufficiency of the information belong two considerations; what points of religion are fundamental, and what perfective, being matter of further building and perfection upon one and the same foundation; and again, how the gradations of light according to the dispensation of times are material to the sufficiency of belief.

De gradibus unitatis in Civitate Dei.

Here again I may rather give it in advice than note it as deficient, that the points fundamental, and the points of further perfection only, ought to be with piety and wisdom distinguished: a subject tending to much like end as that I noted before; for as that other were likely to abate the number of controversies, so this is like to abate the heat of many of them. We see Moses when he saw the Israelite and the Ægyptian fight, he did not say, *Why strive you?* but drew his sword and slew the Ægyptian: but when he saw the two Israelites fight, he said, *You are brethren, why strive you?* If the point of doctrine be an Ægyptian, it must be slain by the sword of the Spirit, and not reconciled; but if it be an Israelite, though in the wrong, then, *Why strive you?* We see of the fundamental points, our Saviour penneth the league thus, *He that is not with us, is against us;* but of points not fundamental, thus, *He that is not against us, is with us.* So we see the coat of our Saviour was entire without seam, and so is the doctrine of the Scriptures in itself; but the garment of the Church was of divers colours, and yet not divided. We see the chaff may and ought to be severed from the corn in the ear, but the tares may not be pulled up from the corn in the field: so as it is a thing of great use well to define what and of what latitude those points are, which do make men merely aliens and disincorporate from the Church of God [360].

[357] The original and also edd. 1629 and 1633 have *of*.

[358] In the translation this last sentence is omitted, and the substance both of this and of the preceding paragraph is set forth in a better order and more concisely, though to the same general effect.

[359] In the translation he expressly confines himself to the latter only, and the rest of the paragraph is omitted.

[360] Of this paragraph again the substance is given in the translation, though in a some-

For the obtaining of the information, it resteth upon the true and sound interpretation of the Scriptures, which are the fountains of the water of life. The interpretations of the Scriptures [361] are of two sorts ; methodical, and solute or at large. For this divine water, which excelleth so much that of Jacob's well, is drawn forth much in the same kind as natural water useth to be out of wells and fountains ; either it is first forced up into a cistern, and from thence fetched and derived for use ; or else it is drawn and received in buckets and vessels immediately where it springeth. The former sort whereof, though it seem to be the more ready, yet in my judgment is more subject to corrupt [362]. This is that method which hath exhibited unto us the scholastical divinity ; whereby divinity hath been reduced into an art, as into a cistern, and the streams of doctrine or positions fetched and derived from thence.

In this men have sought three things, a summary brevity, a compacted strength, and a complete perfection ; whereof the two first they fail to find, and the last they ought not to seek. For as to brevity, we see in all summary methods, while men purpose to abridge they give cause to dilate. For the sum or abridgment by contraction becometh obscure, the obscurity requireth exposition, and the exposition is deduced into large commentaries, or into common places and titles, which grow to be more vast than the original writings whence the sum was at first extracted. So we see the volumes of the schoolmen are greater much than the first writings of the fathers, whence the Master of the Sentences [363] made his sum or collection. So in like manner the volumes of the modern doctors of the civil law exceed those of the ancient jurisconsults, of which Tribonian compiled the digest [364]. So as this course of sums and commentaries is that which doth infallibly make the body of sciences more immense in quantity, and more base in substance.

And for strength, it is true that knowledges reduced into exact methods have a shew of strength, in that each part seemeth to support and sustain the other ; but this is more satisfactory than substantial ; like unto buildings which stand by architecture and compaction, which are more subject to ruin than those which are built more strong in their several parts, though less compacted. But it is plain that the more you recede from your grounds the weaker do you conclude ; and as in nature the more you remove yourself from particulars the

what different order ; and a sentence is added to the following effect : If any one thinks (he says) that this has been done already, let him consider again and again how far it has been done with sincerity and moderation. In the mean time he who speaks of peace is like enough to receive the answer which Jehu gave to the messenger—*Is it peace, Jehu ? What hast thou to do with peace ? Get thee behind me.* For it is not peace between the contending opinions that most men have at heart, but the establishment of their own opinions (*cum non pax, sed partes, plerisque cordi sint*).

361 A sentence is introduced here in the translation, to say that he speaks only of the *method* of interpretation, not of the authority : the ground of the authority being the consent of the Church.

362 This censure, as well as the remarks upon the methodical system which are contained in the three following paragraphs, are omitted in the translation ; probably as involving matter which would not have been allowed at Rome.

363 Peter the Lombard, Bishop of Paris, wrote a Sum of Theology in four books entitled " The Sentences " ; and according to the taste of the middle ages acquired the title of " Master of the Sentences ". Many of these scholastic titles are curious. Thus Thomas Aquinas is Doctor Angelicus ; Buonaventura, Doctor Seraphicus ; Alexander Hales, Doctor Irrefragabilis ; Duns Scotus, Doctor Subtilis ; Raymund Lully, Doctor Illuminatus ; Roger Bacon, Doctor Mirabilis ; Occam, Doctor Singularis.—*R. L. E.*

364 Compare with this remark that of Maphæus Vegius—" Existimabas, ut opinor ", —he is apostrophising Tribonian—" plurimum conducere utilitati studentium, si quod antea in multitudine tractatuum tardius effecerunt coangustatis postea libris citius adsequi possunt. . . . Sed longe secus ac persuadebas tibi cessit. Quis namque nesciat infinitas et nonnunquam ineptas vanasque interpretationes quibus nulla fere lex exempta est ? " See Maphæus Vegius de Verborum significatione, xiv. 77., apud Savigny History of Roman Law in the Middle Ages, ch. 59.—*R.L.E.*

greater peril of error you do incur, so much more in divinity the more you recede from the Scriptures by inferences and consequences, the more weak and dilute are your positions.

And as for perfection or completeness in divinity, it is not to be sought; which makes this course of artificial divinity the more suspect. For he that will reduce a knowledge into an art will make it round and uniform; but in divinity many things must be left abrupt and concluded with this: *O altitudo sapientiæ et scientiæ Dei! quam incomprehensibilia sunt judicia ejus, et non investigabiles viæ ejus!* [O the depth of the wisdom and knowledge of God! How incomprehensible are his judgments, and his ways past finding out!]. So again the apostle saith, *Ex parte scimus* [we know in part], and to have the form of a total where there is but matter for a part cannot be without supplies by supposition and presumption. And therefore I conclude, that the true use of these Sums and Methods hath place in institutions or introductions preparatory unto knowledge; but in them, or by deducement from them, to handle the main body and substance of a knowledge, is in all sciences prejudicial, and in divinity dangerous.

As to the interpretation of the Scriptures solute and at large, there have been divers kinds introduced and devised; some of them rather curious and unsafe, than sober and warranted. Notwithstanding thus much must be confessed, that the Scriptures, being given by inspiration and not by human reason, do differ from all other books in the author; which by consequence doth draw on some difference to be used by the expositor. For the inditer of them did know four things which no man attains to know; which are, the mysteries of the kingdom of glory; the perfection of the laws of nature; the secrets of the heart of man; and the future succession of all ages [365]. For as to the first, it is said, *He that presseth into the light shall be oppressed of the glory:* and again, *No man shall see my face and live.* To the second, *When he prepared the heavens I was present, when by law and compass he inclosed the deep.* To the third, *Neither was it needful that any should bear witness to him of Man, for he knew well wha was in Man.* And to the last, *From the beginning are known to the Lord all his works.*

From the former two [366] of these have been drawn certain senses and expositions of Scriptures, which had need be contained within the bounds of sobriety; the one anagogical, and the other philosophical. But as to the former, man is not to prevent his time: *Videmus nunc per speculum in ænigmate, tunc autem facie ad faciem* [now we see through a glass darkly, but then face to face]: wherein nevertheless there seemeth to be a liberty granted, as far forth as the polishing of this glass, or some moderate explication of this ænigma. But to press too far into it, cannot but cause a dissolution and overthrow of the spirit of man. For in the body there are three degrees of that we receive into it; Aliment, Medicine, and Poison; whereof aliment is that which the nature of man can perfectly alter and overcome: medicine is that which is partly converted by nature, and partly converteth nature; and poison is that which worketh wholly upon nature, without that that nature can in any part work upon it. So in the mind whatsoever knowledge reason cannot at all work upon and convert, is a mere intoxication, and endangereth a dissolution of the mind and understanding.

But for the latter [367], it hath been extremely set on foot of late time by the

[365] Of these four things he mentions in the translation only the two last; introducing the mention of them in the next paragraph but three, and in the mean time omitting altogether both this and the following paragraph.

[366] *i.e.* from the intimations in the Scriptures concerning the Kingdom of Glory and the Laws of Nature. Edd. 1629 and 1633 have "from the former of these two"; obviously a misprint, though adopted in all modern editions.

[367] *i.e.* the *philosophical* exposition. The "*former*", *i.e.* the *anagogical* exposition, is not mentioned in the translation; which only says that the method of interpretation solute and at large has been carried to excess in two ways; first in supposing such perfection in the Scriptures that all philosophy is to be sought there, secondly in interpreting

school of Paracelsus, and some others, that have pretended to find the truth of all natural philosophy in the Scriptures; scandalizing and traducing all other philosophy as heathenish and profane. But there is no such enmity between God's word and his works. Neither do they give honour to the Scriptures, as they suppose, but much imbase them. For to seek heaven and earth in the word of God, whereof it is said, *Heaven and earth shall pass, but my word shall not pass*, is to seek temporary things amongst eternal: and as to seek divinity in philosophy is to seek the living amongst the dead, so to seek philosophy in divinity is to seek the dead amongst the living [368]: neither are the pots or lavers whose place was in the outward part of the temple to be sought in the holiest place of all, where the ark of the testimony was seated. And again, the scope or purpose of the Spirit of God is not to express matters of nature in the Scriptures, otherwise than in passage, and for application to man's capacity and to matters moral or divine. And it is a true rule *Authoris aliud agentis parva authoritas* [what a man says incidentally about matters which are not in question has little authority]; for it were a strange conclusion, if a man should use a similitude for ornament or illustration sake, borrowed from nature or history according to vulgar conceit, as of a Basilisk, an Unicorn, a Centaur, a Briareus, an Hydra, or the like, that therefore he must needs be thought to affirm the matter thereof positively to be true. To conclude therefore, these two interpretations, the one by reduction or ænigmatical, the other philosophical or physical, which have been received and pursued in imitation of the rabbins and cabalists, are to be confined with a *Noli altum sapere, sed time* [be not overwise, but fear].

But the two later points, known to God and unknown to man, touching *the secrets of the heart, and the successions of time*, doth make a just and sound difference between the manner of the exposition of the Scriptures, and all other books. For it is an excellent observation which hath been made upon the answers of our Saviour Christ to many of the questions which were propounded to him, how that they are impertinent to the state of the question demanded; the reason whereof is, because not being like man, which knows man's thoughts by his words, but knowing man's thoughts immediately, he never answered their words, but their thoughts [369]: much in the like manner it is with the Scriptures, which being written to the thoughts of men, and to the succession of all ages, with a foresight of all heresies, contradictions, differing estates of the church, yea and particularly of the elect, are not to be interpreted only according to the latitude of the proper sense of the place, and respectively towards that present occasion whereupon the words were uttered; or in precise congruity or contexture with the words before or after; or in contemplation of the principal scope of the place; but have in themselves, not only totally or collectively, but distributively in clauses and words, infinite springs and streams of doctrine to water the church in every part [370]; and therefore as the literal sense is as it were the main stream or river; so the moral sense chiefly, and sometimes the allegorical or typical, are they whereof the church has most use: not that I wish men to be bold in allegories, or indulgent or light in allusions; but that I do much condemn that interpretation of the Scripture which is only after the manner as men use to interpret a profane book.

In this part touching the exposition of the Scriptures, I can report no deficience; but by way of remembrance this I will add: In perusing books of divinity, I find many [371] books of controversies; and many of common places and treatises [372]; a mass of positive divinity, as it is made an art; a number

them in the same manner as one would interpret an uninspired book. The remarks on the first of these excesses coincide with the first half of this paragraph (the rest being omitted), those on the second with the next paragraph.

368 The rest of this paragraph is omitted in the translation.

369 And also (the translation adds) because he addressed himself not solely to those present, but to men of all times and places to whom the gospel was to be preached.

370 The rest of the paragraph is omitted in the translation.

371 In the translation he says *too many*.

372 also "cases of conscience"—which he especially commends further on, in a passage not translated.

of sermons and lectures, and many prolix commentaries upon the Scriptures, with harmonies and concordances: but that form of writing in divinity, which in my judgment is of all others most rich and precious, is positive divinity collected upon particular texts of Scriptures in brief observations; not dilated into common places, not chasing after controversies, not reduced into method of art; a thing abounding in sermons, which will vanish, but defective in books which will remain; and a thing wherein this age excelleth. For I am persuaded, and I may speak it with an *Absit invidia verbo* [meaning no offence], and no ways in derogation of antiquity, but as in a good emulation between the vine and the olive, that if the choice and best of those observations upon texts of Scriptures which have been made dispersedly in sermons within this your Majesty's island [373] of Britain by the space of these forty years and more (leaving out the largeness of exhortations and applications thereupon) had been set down in a continuance, it had been the best work in divinity which had been written since the apostles' times [374].

Emanationes Scripturarum in doctrinas positivas.

The matter informed by divinity is of two kinds; matter of belief and truth of opinion, and matter of service and adoration; which is also judged and directed by the former; the one being as the internal soul of religion, and the other as the external body thereof. And therefore the heathen religion was not only a worship of idols, but the whole religion was an idol in itself; for it had no soul, that is, no certainty of belief or confession; as a man may well think, considering the chief doctors of their church were the poets; and the reason was, because the heathen gods were no jealous gods, but were glad to be admitted into part, as they had reason. Neither did they respect the pureness of heart, so they might have external honour and rites.

But out of these two do result and issue four main branches of divinity; Faith, Manners, Liturgy, and Government. Faith containeth the doctrine of the nature of God, of the attributes of God, and of the works of God. The nature of God consisteth of three persons in unity of Godhead. The attributes of God are either common to the Deity, or respective to the persons. The works of God summary are two, that of the Creation, and that of the Redemption; and both these works, as in total they appertain to the unity of the Godhead, so in their parts they refer to the three persons: that of the Creation, in the mass of the matter to the Father; in the disposition of the form to the Son; and in the continuance and conservation of the being to the Holy Spirit: so that of the Redemption, in the election and counsel to the Father; in the whole act and consummation to the Son; and in the application to the Holy Spirit; for by the Holy Ghost was Christ conceived in flesh, and by the Holy Ghost are the elect regenerate in spirit. This work likewise we consider either effectually in the elect; or privatively [375] in the reprobate; or according to appearance in the visible church.

For Manners, the doctrine thereof is contained in the law, which discloseth sin. The law itself is divided, according to the edition thereof, into the law of Nature, the law Moral, and the law Positive; and according to the style, into Negative and Affirmative, Prohibitions and Commandments. Sin, in the matter

[373] So edd. 1629 and 1633. The original has *ilands*.

[374] This last sentence is omitted in the translation,—no doubt as being inadmissible at Rome. But in its place is introduced one of Bacon's happiest illustrations, and one which is not, I think, to be found anywhere in his own English. "Certainly (he says) as we find it in wines, that those which flow freely from the first treading of the grape are sweeter than those which are squeezed out by the wine-press, because the latter taste somewhat of the stone and the rind; so are those doctrines most wholesome and sweet which ooze out of the Scriptures when gently crushed, and are not forced into controversies and common places."

The next six paragraphs are entirely omitted,—as belonging to that part of the subject with which he has professed in the beginning that he will not meddle.

[375] The original, and also edd. 1629 and 1633, have *privately*.

and subject thereof, is divided according to the commandments; in the form thereof, it referreth to the three persons, in Deity: sins of Infirmity against the Father, whose more special attribute is Power; sins of Ignorance against the Son, whose attribute is Wisdom; and sins of Malice against the Holy Ghost, whose attribute is Grace or Love. In the motions of it, it either moveth to the right hand or to the left; either to blind devotion, or to profane and libertine transgression; either in imposing restraint where God granteth liberty, or in taking liberty where God imposeth restraint. In the degrees and progress of it, it divideth itself into thought, word, or act. And in this part I commend much the deducing of the law of God to cases of conscience; for that I take indeed to be a breaking, and not exhibiting whole, of the bread of life. But that which quickeneth both these doctrines of faith and manners, is the elevation and consent of the heart; whereunto appertain books of exhortation, holy meditation, Christian resolution, and the like.

For the Liturgy or service, it consisteth of the reciprocal acts between God and man; which, on the part of God, are the preaching of the word and the sacraments, which are seals to the covenant, or as the visible word; and on the part of man [376], invocation of the name of God, and under the law, sacrifices, which were as visible prayers or confessions: but now the adoration being *in spiritu et veritate* [in spirit and in truth], there remaineth only *vituli labiorum* [offerings of the lips]; although the use of holy vows of thankfulness and retribution may be accounted also as sealed petitions.

And for the Government of the church, it consisteth of the patrimony of the church, the franchises of the church, and the offices and jurisdictions of the church, and the laws of the church directing the whole; all which have two considerations, the one in themselves, the other how they stand compatible and agreeable to the civil estate.

This matter of divinity is handled either in form of instruction of truth, or in form of confutation of falsehood. The declinations from religion, besides the privative [377], which is atheism and the branches thereof, are three; Heresies, Idolatry, and Witchcraft; Heresies, when we serve the true God with a false worship; Idolatry, when we worship false gods, supposing them to be true; and Witchcraft, when we adore false gods, knowing them to be wicked and false. For so your Majesty doth excellently well observe, that Witchcraft is the height of Idolatry. And yet we see though these be true degrees, Samuel teacheth us that they are all of a nature, when there is once a receding from the word of God; for so he saith, *Quasi peccatum ariolandi est repugnare, et quasi scelus idololatriæ nolle acquiescere* [rebellion is as the sin of Witchcraft, and Stubbornness as the crime of Idolatry].

These things I have passed over so briefly because I can report no deficience concerning them: for I can find no space or ground that lieth vacant and unsown in the matter of divinity; so diligent have men been, either in sowing of good seed or in sowing of tares.

THUS have I made as it were a small Globe of the Intellectual World, as truly and faithfully as I could discover; with a note and description of those parts which seem to me not constantly occupate, or not well converted by the labour of man. In which, if I have in any point receded from that which is commonly received, it hath been with a purpose of proceeding *in melius*, and not *in aliud*; a mind of amendment and proficience, and not of change and difference. For I could not be true and constant to the argument I handle, if I were not willing to go beyond others; but yet not more willing than to have others go beyond me again: which may the better appear by this, that I have propounded my opinions naked and unarmed, not seeking to preoccupate the liberty of men's judgments by confutation. For in any thing which is well set down, I am in good hope that if the first reading move an objection, the second reading will make an answer. And in those things wherein I have erred, I am sure I have not prejudiced the right by litigious arguments; which certainly have

[376] So edd. 1629 and 1633. The original has *mans*.
[377] So edd. 1629 and 1633. The original has *primitive*.

this contrary effect and operation, that they add authority to error, and destroy the authority of that which is well invented: for question is an honour and preferment to falsehood, as on the other side it is a repulse to truth. But the errors I claim and challenge to myself as mine own. The good, if any be, is due *tanquam adeps sacrificii* [as the fat of the sacrifice], to be incensed to the honour, first of the Divine Majesty, and next of your Majesty, to whom on earth I am most bounden.

VALERIUS TERMINUS

Preface by ROBERT LESLIE ELLIS.

THE following fragments of a great work on the Interpretation of Nature were first published in Stephens's Letters and Remains [1734]. They consist partly of detached passages, and partly of an epitome of twelve chapters of the first book of the proposed work. The detached passages contain the first, sixth, and eighth chapters, and portions of the fourth, fifth, seventh, ninth, tenth, eleventh, and sixteenth. The epitome contains an account of the contents of all the chapters from the twelfth to the twenty-sixth inclusive, omitting the twentieth, twenty-third, and twenty-fourth. Thus the sixteenth chapter is mentioned both in the epitome and among the detached passages, and we are thus enabled to see that the two portions of the following tract belong to the same work, as it appears from both that the sixteenth chapter was to treat of the doctrine of idola.

It is impossible to ascertain the motive which determined Bacon to give to the supposed author the name of Valerius Terminus, or to his commentator, of whose annotations we have no remains, that of Hermes Stella. It may be conjectured that by the name Terminus he intended to intimate that the new philosophy would put an end to the wandering of mankind in search of truth, that it would be the *terminus ad quem* in which when it was once attained the mind would finally acquiesce.

Again, the obscurity of the text was to be in some measure removed by the annotations of Stella; not however wholly, for Bacon in the epitome of the eighteenth chapter commends the manner of publishing knowledge "whereby it shall not be to the capacity nor taste of all, but shall as it were single and adopt his reader." Stella was therefore to throw a kind of starlight on the subject, enough to prevent the student's losing his way, but not much more.

However this may be, the tract is undoubtedly obscure, partly from the style in which it is written, and partly from its being only a fragment. It is at the same time full of interest, inasmuch as it is the earliest type of the *Instauratio*. The first book of the work ascribed to Valerius Terminus would have corresponded to the *De Augmentis* and to the first book of the *Novum Organum*, the plan being that it should contain whatever was necessary to be known before the new method could be stated. In the second book, as in the second book of the *Novum Organum*, we should have found the method itself.

The *Advancement of Learning*, which was developed into the *De Augmentis*, corresponds to the first ten chapters of *Valerius Terminus*, and especially to the first and tenth. To the remainder of the book (a few chapters are clearly wanted after the last mentioned in the epitome) corresponds the first book of the *Novum Organum*. The tenth chapter, of which we have only a small fragment, is entitled "The Inventory, or an Enumeration and View of Inventions already discovered and in use; together with a note of the wants, and the nature of the supplies." It therefore corresponds to the second book of the *Advancement*, and to the last eight books of the *De Augmentis*, but would doubtless have been a mere summary.[1] When Bacon subsequently determined to give more development to this part of the subject, he was naturally led to make a break after the inventory, and thus we get the origin of the separation between the *De Augmentis* and the *Novum Organum*.

[1] See my note at the end of this Preface. *J.S.*

The most important portion of *Valerius Terminus* is the eleventh chapter, which contains a general statement of the problem to be solved. It corresponds to the opening axioms of the second book of the *Novum Organum*, but differs from them in containing very little on the subject of forms. What Bacon afterwards called the investigation of the form he here calls the freeing of a direction. The object to be sought for is, he says, " the revealing and discovering of new inventions and operations."—" This to be done without the errors and conjectures of art, or the length or difficulties of experience." In order to guide men's travels, a full direction must be given to them, and the fullness of a direction consists in two conditions, certainty and liberty. Certainty is when the direction is infallible ; liberty when it comprehends all possible ways and means. Both conditions are fulfilled by the knowledge of the form, to which the doctrine of direction entirely corresponds. This correspondency Bacon recognises towards the end of the chapter, but in illustrating the two conditions of which we have been speaking he does not use the word form. The notion of the form or formal cause comes into his system only on historical grounds. In truth, in *Valerius Terminus* he is disposed to illustrate the doctrine of direction not so much by that of the formal cause as by two rules which are of great importance in the logical system of Ramus. " The two commended rules by him set down," that is by Aristotle, " whereby the axioms of science are precepted to be made convertible, and which the latter men have not without elegancy surnamed, the one the rule of truth because it preventeth deceipt ; the other the rule of prudence because it freeth election ; are the same thing in speculation and affirmation, which we now affirm." And then follows an example, of which Bacon says that it " will make my meaning attained, and yet percase make it thought that they attained it not." In this example the effect to be produced is whiteness, and the first direction given is to intermingle air and water ; of this direction it is said that it is certain, but very particular and restrained, and he then goes on to free it by leaving out the unessential conditions. Of this however it is not now necessary to speak at length ; but the " two commended rules " may require some illustration.

In many passages of his works Peter Ramus condemns Aristotle for having violated three rules which he had himself propounded. To these rules Ramus gives somewhat fanciful names. The first is the rule of truth, the second the rule of justice, and the third the rule of wisdom. These three rules are all to be fulfilled by the principles of every science (axiomata artium). The first requires the proposition to be in all cases true, the second requires its subject and predicate to be essentially connected together, and the third requires the converse of the proposition to be true as well as the proposition itself. The whole of this theory, to which Ramus and the Ramistæ seem to have ascribed much importance, is founded on the fourth chapter of the first book of the *Posterior Analytics*. Aristotle in speaking of the principles of demonstration explains the meaning of three phrases, κατὰ παντός, *de omni* ; καθ' αὑτό, *per se* ; and καθόλου, *universaliter*. When the predicate can be affirmed in all cases and at all times of the subject of a proposition, the predication is said to be *de omni* or κατὰ παντός. Again, whatever is so connected with the essence of a thing as to be involved in its definition is said to belong to it *per se*, καθ' αὑτό and the same phrase is applicable when the thing itself is involved in the definition of that which we refer to it. Thus a line belongs *per se* to the notion of a triangle, because the definition of a triangle involves the conception of a line, and odd and even belong *per se* to the notion of number, because the definition of odd or even introduces the notion of a number divisible or not divisible into equal parts.[2] Lastly, that which always belongs to any given subject, and belongs to it inasmuch as it is that which it is, is said to belong to it καθόλου, *universaliter*. Thus to have angles equal to two right angles does not belong to any figure taken at random, it is not true of figure κατὰ παντός, and though it is true of any isosceles triangle yet it is not true of it in the first instance [3] nor inasmuch as it is isosceles. But it is true of a triangle in all cases and

[2] Aristotle mentions a third sense of κατὰ παντός, which it is not here necessary to mention.

[3] ἀλλ' οὐ πρῶτον, ἀλλὰ τὸ τρίγωνον πρότερον.

because it is a triangle, and therefore belongs to it καθόλου, *universaliter*. It is manifest that whenever this is the case the proposition is convertible. Thus a figure having angles equal to two right angles is a triangle.

Aristotle is not laying down three general rules, but he was understood to do so by Ramus—whose rules of truth, justice, and wisdom respectively correspond to the three phrases of which we have been speaking.

Bacon, adopting two of these rules (he makes no allusion to that of justice), compares them with the two conditions which a direction ought to fulfil. If it be certain, the effect will follow from it at all times and in all cases. And this corresponds to the rule of truth. If it be free, then whenever the effect is present the direction must have been complied with. The presence of either implies that of the other. And this is the practical application of the rule of wisdom.

I have thought it well to enter into this explanation, because it shows in the first place that the system of Peter Ramus had considerable influence on Bacon's notions of logic, and in the second that he had formed a complete and definite conception of his own method before he had been led to connect it with the doctrine of forms.

At the end of the eleventh chapter Bacon proposes to give three cautions whereby we may ascertain whether what seems to be a direction really is one. The general principle is that the direction must carry you a degree or remove nearer to action, operation, or light; else it is but an abstract or varied notion. The first of the three particular cautions is "that the nature discovered be more original than the nature supposed, and not more secondary or of the like degree": a remark which, taken in conjunction with the illustrations by which it is followed, serves to confirm what I have elsewhere endeavoured to show, that Bacon's idea of natural philosophy was the explanation of the secondary qualities of bodies by means of the primary. The second caution is so obscurely expressed that I can only conjecture that it refers to the necessity of studying abstract qualities before commencing the study of concrete bodies. Composition subaltern and composition absolute are placed in antithesis to each other. The latter phrase apparently describes the synthesis of abstract natures by which an actual ultimate species is formed, and the former [refers] to the formation of a class of objects which all agree in possessing the nature which is the subject of inquiry. The fragment breaks off before the delivery of this second caution is completed, and we therefore know nothing of the third and last.

NOTE

THE manuscript from which Robert Stephens printed these fragments was found among some loose papers placed in his hands by the Earl of Oxford, and is now in the British Museum ; Harl. MSS. 6462. It is a thin paper volume of the quarto size, written in the hand of one of Bacon's servants, with corrections, erasures, and interlineations in his own. The chapters of which it consists are both imperfect in themselves (all but three),—some breaking off abruptly, others being little more than tables of contents,—and imperfect in their connexion with each other ; so much so as to suggest the idea of a number, of separate papers loosely put together. But it was not so (and the fact is important) that the volume itself was actually made up. However they came together, they are here fairly and consecutively copied out. Though it be a collection of fragments therefore it is such a collection as Bacon thought worthy not only of being preserved, but of being transcribed into a volume ; and a particular account of it will not be out of place.

The contents of the manuscript before Bacon touched it may be thus described.

1. A titlepage, on which is written "VALERIUS TERMINUS of the Interpretation of Nature, with the annotations of HERMES STELLA."
2. "Chapter I. Of the limits and end of knowledge ;" with a running title, "Of the Interpretation of Nature."
3. "The chapter immediately following the Inventory ; being the 11th in order."
4. "A part of the 9th chapter, immediately precedent to the Inventory, and inducing the same."
5. "The Inventory, or an enumeration and view of inventions already discovered and in use, together with a note of the wants and the nature of the supplies ; being the 10th chapter, and this a fragment only of the same."
6. Part of a chapter, not numbered, "Of the internal and profound errors and superstitions in the nature of the mind, and of the four sorts of Idols or fictions which offer themselves to the understanding in the Inquisition of knowledge."
7. "Of the impediments of knowledge ; being the third chapter, the preface only of it."
8. "Of the impediments which have been in the times and in diversion of wits ; being the fourth chapter."
9. "Of the impediments of knowledge for want of a true succession of wits, and that hitherto the length of one man's life hath been the greatest measure of knowledge ; being the fifth chapter."
10. "That the pretended succession of wits hath been evil placed, forasmuch as after variety of sects and opinions the most popular and not the truest prevaileth and weareth out the rest ; being the sixth chapter."
11. "Of the impediments of knowledge in handling it by parts, and in slipping off particular sciences from the root and stock of universal knowledge ; being the seventh chapter."
12. "That the end and scope of knowledge hath been generally mistaken, and that men were never well advised what it was they sought" (part of a chapter not numbered).
13. "An abridgment of divers chapters of the first book ;" namely, the 12th, 13th and 14th (over which is a running title "Of active knowledge") ; and (without any running title) the 15th, 16th, 17th, 18th, 19th, 21st, 22nd, 25th, and 26th. These abridgments have no headings ; and at the end is written, "The end of the Abridgment of the first book of the Interpretation of Nature".

Such was the arrangement of the manuscript as the transcriber left it; which I have thought worth preserving, because I seem to see traces in it of two separate stages in the development of the work; the order of the chapters as they are transcribed being probably the same in which Bacon wrote them; and the numbers inserted at the end of the headings indicating the order in which, when he placed them in the transcriber's hands, it was his intention to arrange them; and because it proves at any rate that at that time the design of the whole book was clearly laid out in his mind.

There is nothing, unfortunately, to fix the *date* of the transcript, unless it be implied in certain astronomical or astrological symbols written on the blank outside of the volume; in which the figures 1603 occur.[1] This may possibly be the transcriber's note of the time when he finished his work; for which (but for one circumstance which I shall mention presently) I should think the year 1603 as likely a date as any; for we know from a letter of Bacon's, dated 3rd July 1603, that he had at that time resolved

[1] See the second page of the facsimile in vol. iii. of ed. Ellis and Spedding. The writing in the original is on the outside of the last leaf, which is in fact the cover. The front cover, if there ever was one, is lost. The ink with which the line containing the symbols is written corresponds with that in the body of the MS.; and the line itself is placed symmetrically in the middle of the page, near the top. The two lower lines are apparently by another hand, probably of later date, certainly in ink of a different colour, and paler. The word "Philosophy" is in Bacon's own hand, written lightly in the upper corner at the left, and is no doubt merely a docket inserted afterwards when he was sorting his papers. What connexion there was between the note and the MS. it is impossible to say. But it is evidently a careful memorandum of something, set down by somebody when the MS. was at hand; and so many of the characters resemble those adopted to represent the planets and the signs of the zodiac, that one is led to suspect in it a note of the positions of the heavenly bodies at the time of some remarkable accident;—perhaps the plague, of which 30,578 persons died in London, during the year ending 22nd December, 1603. The period of the commencement, the duration, or the cessation of such an epidemic might naturally be so noted. Now three of the characters clearly represent respectively Mercury, Aquarius, and Sagittarius. The sign for Jupiter as we find it in old books, is so like a 4, that the first figure of 45 may very well have been meant for it. The monogram at the beginning of the line bears a near resemblance to the sign of Capricorn in its most characteristic feature. And the mark over the sign of Aquarius appears to be an abbreviation of that which usually represents the Sun. (The blot between 1603 and B is nothing; being only meant to represent a figure 6 blotted out with the finger before the ink was dry). Suspecting therefore that the writing contained a note of the positions of Mercury and Jupiter in the year 1603, I sent a copy to a scientific friend and asked him if from such data he could determine the month indicated. He found upon a rough calculation (taking account of mean motions only) that Jupiter did enter the sign of Sagittarius about the 10th of August, 1603, and continued there for about a twelvemonth; that the Sun entered Aquarius about the 12th or 13th of January, 1603–4; and that Mercury was about the 16th or 17th of the same month in the 26th or 27th degree of Capricorn:—coincidences which would have been almost conclusive as to the date indicated, if Capricorn had only stood where Aquarius does, and vice versâ. But their position as they actually stood in the MS. is a formidable, if not fatal, objection to the interpretation.

According to another opinion with which I have been favoured, the first monogram is a *nota bene*; the next group may mean *Dies Mercurii* (Wednesday) *26th January*, 1603; and the rest refers to something not connected with astronomy. But to this also there is a serious objection. The 26th of January, 1603–4, was a Friday; and it seems to me very improbable that any Englishman would have described the preceding January as belonging to the year 1603. Bacon himself invariably dated according to the civil year, and the occasional use of the historical year in loose memoranda would have involved all his dates in confusion. I should think it more probable that the writer (who may have been copying a kind of notation with which he was not familiar) miscopied the sign of Venus into that of Mercury; in which case it would mean *Friday*, 26th January, 1603–4. But even then the explanation would be unsatisfactory, as leaving so much unexplained. Those however who are familiar with old MSS. relating to such subjects may probably be able to interpret the whole.

" to meddle as little as possible in the King's causes," and to " put his ambition wholly upon his pen " ; and we know from the *Advancement of Learning* that in 1605 he was engaged upon a work entitled " The Interpretation of Nature " : to which I may add that there is in the Lambeth Library a copy of a letter from Bacon to Lord Kinlosse, dated 25th March, 1603, and written in the same hand as this manuscript.

Bacon's corrections, if I may judge from the character of the handwriting, were inserted a little later ; for it is a fact that about the beginning of James' reign his writing underwent a remarkable change, from the hurried Saxon hand full of large sweeping curves, and with letters imperfectly formed and connected, which he wrote in Elizabeth's time, to a small, neat, light, and compact one, formed more upon the Italian model which was then coming into fashion ; and when these corrections were made it is evident that this new character had become natural to him and easy. It is of course impossible to fix the precise date of such a change,—the more so because his autographs of this period are very scarce,—but whenever it was that he corrected this manuscript, it is evident that he then considered it worthy of careful revision. He has not merely inserted a sentence here and there, altered the numbers of the chapters, and added words to the headings in order to make the description more exact ; but he has taken the trouble to add the running title wherever it was wanting, thus writing the words " of the Interpretation of Nature " at full length not less than eighteen times over ; and upon the blank space of the titlepage he has written out a complete table of contents [2]. In short, if he had been preparing the manuscript for the press or for a fresh transcript, he could not have done it more completely or carefully,—only that he has given no directions for altering the order of the chapters so as to make it correspond with the numbers. And hence I infer that up to the time when he made these corrections, this was the form of the great work on which he was engaged : it was a work concerning the Interpretation of Nature ; which was to begin where the *Novum Organum* begins ; and of which the first book was to include all the preliminary considerations preparatory to the exposition of the formula.

I place this fragment here in deference to Mr. Ellis's decided opinion that it was written before the *Advancement of Learning*. The positive ground indeed which he alleges in support of that conclusion I am obliged to set aside, as founded, I think, upon a misapprehension ; and the supposition that no part of it was written later involves a difficulty which I cannot yet get over to my own satisfaction. But that the body of it was written earlier I see no reason to doubt ; and if so, this is its proper place. [3]

The particular point on which I venture to disagree with Mr. Ellis I have stated in a note upon his preface to the *Novum Organum*, promising at the same time a fuller explanation of the grounds of my own conclusion, which I will now give.

The question is, whether the " Inventory " in the 10th chapter of *Valerius Terminus* was to have exhibited a general survey of the state of knowledge corresponding with that which fills the second book of the *Advancement of Learning*. I think not.

It is true indeed that the title of that 10th chapter,—namely, " The Inventory, or an enumeration and view of inventions already discovered and in use, with a note of the wants and the nature of the supplies "—has at first sight a considerable resemblance to the description of the contents of the second book of the *Advancement of Learning*,—namely, " 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 ; . . . wherein nevertheless my purpose is at this time to note only omissions and deficiencies, and not to make any redargutions of errors," and so on. But an " enumeration of *Inventions* " is not the same thing as " a perambulation of *Learning* " ; and it will be found upon closer examination that the " Inventory " spoken of in *Valerius Terminus* does really correspond to one, and one only, of the fifty-one *Desiderata* set down at the end of the *De Augmentis* ; viz. that *Inventarium opum humanarum*, which was to be an appendix to the *Magia naturalis*. See *De Aug.* iii. 5. This will appear clearly by comparing the descriptions of the two.

In the *Advancement of Learning* Bacon tells us that there are two points of much purpose pertaining to the department of Natural Magic : the first of which is, " That there

[2] I am inclined to think that there was an interval between the writing of the first eleven titles and the last two ; during which the Italian character had become more familiar to him.

[3] The present reprint follows a different order.—Ed.

be made a calendar resembling an Inventory of the *estate of man*, containing *all the Inventions, being the works or fruits of nature or art*, which are now extant *and of which 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 nearest in degree to that impossibility : to the end that by these optatives and essentials man's inquiry may be the more awake in deducing direction of works from the speculation of causes ".

The inventory which was to have been inserted in the 10th chapter of *Valerius Terminus* is thus introduced :—" The plainest method and most directly pertinent to this intention will be to make distribution of *sciences, arts, inventions, works*, and their portions, *according to the use and tribute which they yield and render to the condition of man's life ;* and under those several uses, being as several offices of provisions, to charge and tax what may be reasonably exacted or demanded, ... and then upon those charges and taxations to distinguish and present as it were in several columns *what is extant and already found*, and what is *defective and further to be provided*. Of which provisions because in many of them, after the manner of slothful and faulty accomptants, it will be returned by way of excuse that no such are to be had, it will be fit to give some light *of the nature of the supplies ;* whereby it will evidently appear that they are to be compassed and procured ". And that the calendar was to deal, not with knowledge in general, but only with arts and sciences of *invention* in its more restricted sense—the *pars operativa de natura* (*De Aug.* iii. 5.)—appears no less clearly from the opening of the 11th chapter, which was designed immediately to follow the "Inventory". "It appeareth then what is now in proposition, not by general circumlocution but by particular note. No former philosophy," etc., etc., "but the revealing and discovering of *new inventions and operations*, ... the nature and kinds of which inventions *have been described* as they could be discovered ", etc. If further evidence were required of the exact resemblance between the Inventory of *Valerius Terminus* and the Inventarium of the *Advancement* and the *De Augmentis*, I might quote the end of the 9th chapter, where the particular expressions correspond, if possible, more closely still. But I presume that the passages which I have given are enough ; and that the opinion which I have elsewhere expressed as to the origin of the *Advancement of Learning*,—namely, that the writing of it was a by-thought and no part of the work on the Interpretation of Nature as originally designed,—will not be considered inconsistent with the evidence afforded by these fragments.

That the *Valerius Terminus* was composed before the *Advancement*, though a conclusion not deducible from the Inventory, is nevertheless probable : but to suppose that it was so composed *exactly in its present form*, involves, as I said, a difficulty ; which I will now state. The point is interesting, as bearing directly upon the development in Bacon's mind of the doctrine of Idols ; concerning which see preface to *Novum Organum*, note C. But I have to deal with it here merely as bearing upon the probable date of this fragment.

In treating of the department of Logic in the *Advancement*, Bacon notices as altogether wanting " the particular elenches or cautions against *three* false appearances " or fallacies by which the mind of man is beset : the " caution " of which, he says, " doth extremely import the true conduct of human judgment ". These false appearances he describes, though he does not give their names ; and they correspond respectively to what he afterwards called the Idols of the Tribe, the Cave, and the Forum. But he makes no mention of the fourth ; namely, the Idols of the Theatre. Now in *Valerius Terminus* we find two separate passages in which the Idols are mentioned ; and in both all four are enumerated, and all by name ; though what he afterwards called Idols of the Forum, he there calls Idols of the Palace ; and it seems to me very unlikely that, if when he wrote the *Advancement* he had already formed that classification, he should have omitted all mention of the Idols of the Theatre ; for though it is true that that was not the place to discuss them, and therefore in the corresponding passage of the *De Augmentis* they are noticed as to be passed by " for the present," yet they *are* noticed by name, and in all Bacon's later writings the confutation of them holds a very prominent place.

To me the most probable explanation of the fact is this. I have already shown that between the composition and the transcription of these fragments the design of the

work appears to have undergone a considerable change ; the order of the chapters being entirely altered. We have only to suppose therefore that they were composed before the *Advancement* and transcribed after, and that in preparing them for the transcriber Bacon made the same kind of alterations in the originals which he afterwards made upon the transcript, and the difficulty disappears. Nothing would be easier than to correct "three" into "four", and insert "the Idols of the Theatre" at the end of the sentence.

And this reminds me (since I shall have so much to do with these questions of date) to suggest a general caution with regard to them all ; namely, that in the case of fragments like these, the comparison of isolated passages can hardly ever be relied upon for evidence of the date or order of composition, or of the progressive development of the writer's views : and for this simple reason,—we can never be sure that the passages as they now stand formed part of the original writing. The copy of the fragment which we have may be (as there is reason to believe this was) a transcript from several loose papers, written at different periods and containing alterations or additions made from time to time. We may know perhaps that when Bacon published the *Advancement of Learning* he was ignorant of some fact with which he afterwards became acquainted ; we may find in one of these fragments,—say the *Temporis Partus Masculus*,—a passage implying acquaintance with that fact. Does it follow that the *Temporis Partus Masculus* was written after the *Advancement of Learning?* No ; for in looking over the manuscript long after it was written, he may have observed and corrected the error. And we cannot conclude that he at the same time altered the whole composition so as to bring it into accordance with the views he then held ; for that might be too long a work. He may have inserted a particular correction, but meant to rewrite the whole ; and if so, in spite of the later date indicated by that particular passage, the body of the work would still represent a stage in his opinions anterior to the *Advancement of Learning*.

I have felt some doubt whether, in printing this fragment, I should follow the example of Stephens, who gave it exactly as he found it ; or that of later editors, who have altered the order of the chapters so as to make it agree with the numbers. The latter plan will perhaps, upon the whole, be the more convenient. There can be little doubt that the numbers of the chapters indicate the order in which Bacon meant them to be read ; and if any one wishes to compare it with the order in which they seem to have been written, he has only to look at Bacon's table of contents, which was made with reference to the transcript, and which I give unaltered, except as to the spelling.

The notes to this piece are mine.—*J. S.*

VALERIUS TERMINUS

OF THE INTERPRETATION OF NATURE: WITH THE ANNOTATIONS OF HERMES STELLA.[1]

A few fragments of the first book, viz.

1. The first chapter entire. [Of the ends and limits of knowledge].
2. A portion of the 11th chapter. [Of the scale].
3. A small portion of the 9th chapter [being an Inducement to the Inventory].
4. A small portion of the 10th chapter, being the preface to the Inventory.
5. A small portion of the 16th chapter [being a preface to the inward elenches of the mind].
6. A portion of the 4th chapter. [Of the impediments of knowledge in general].
7. A small portion of the 5th chapter. [Of the diversion of wits].
8. The 6th chapter entire. [Of]
9. A portion of the 7th chapter.
10. The 8th chapter entire.
11. Another portion of the 9th chapter.
12. The Abridgment of the 12. 13. 14. 15. 16. 17. 18. 19. 21. 22. 25. 26th chapters of the first book.
13. The first chapter of [the] a book of the same argument written in Latin and destined [for] to be [traditionary] separate and not public[2].

None of the Annotations of Stella are set down in these fragments.

[1] This is written in the transcriber's hand: all that follows in Bacon's. The words between brackets have a line drawn through them.

[2] This refers to the first chapter of the *Temporis Partus Masculus*; which follows in the MS. volume, but not here. It is important as bearing upon the date of that fragment.

Cap. 1.

Of the limits and end of knowledge.

In the divine nature both religion and philosophy hath acknowledged goodness in perfection, science or providence comprehending all things, and absolute sovereignty or kingdom. In aspiring to the throne of power the angels transgressed and fell; in presuming to come within the oracle of knowledge man transgressed and fell [1]; but in pursuit towards the similitude of God's goodness or love (which is one thing, for love is nothing else but goodness put in motion or applied) neither man or spirit ever hath transgressed, or shall transgress.

The angel of light that was, when he presumed before his fall, said within himself, *I will ascend and be like unto the Highest;* not God, but the highest. To be like to God in goodness, was no part of his emulation; knowledge, being in creation an angel of light, was not the want which did most solicit him; only because he was a minister he aimed at a supremacy; therefore his climbing or ascension was turned into a throwing down or precipitation.

Man on the other side, when he was tempted before he fell, had offered unto him this suggestion, *that he should be like unto God.* But how? Not simply, but in this part, *knowing good and evil.* For being in his creation invested with sovereignty of all inferior creatures, he was not needy of power or dominion; but again, being a spirit newly inclosed in a body of earth, he was fittest to be allured with appetite of light and liberty of knowledge; therefore this approaching and intruding into God's secrets and mysteries was rewarded with a further removing and estranging from God's presence. But as to the goodness of God, there is no danger in contending or advancing towards a similitude thereof, as that which is open and propounded to our imitation. For that voice (whereof the heathen and all other errors of religion have ever confessed that it sounds not like man), *Love your enemies; be you like unto your heavenly Father, that suffereth his rain to fall both upon the just and the unjust,* doth well declare, that we can in that point commit no excess; so again we find it often repeated in the old law, *Be you holy as I am holy;* and what is holiness else but goodness, as we consider it separate and guarded from all mixture and all access of evil?

Wherefore seeing that knowledge is of the number of those things which are to be accepted of with caution and distinction; being now to open a fountain, such as it is not easy to discern where the issues and streams thereof will take and fall; I thought it good and necessary in the first place to make a strong and sound head or bank to rule and guide the course of the waters; by setting down this position or firmament, namely, *That all knowledge is to be limited by religion, and to be referred to use and action.*

For if any man shall think by view and inquiry into these sensible and material things, to attain to any light for the revealing of the nature or will of God, he shall dangerously abuse himself. It is true that the contemplation of the creatures of God hath for end (as to the natures of the creatures themselves) knowledge, but as to the nature of God, no knowledge, but wonder; which is nothing else but contemplation broken off, or losing itself. Nay further, as it was aptly said by one of Plato's school *the sense of man resembles the sun, which openeth and revealeth the terrestrial globe, but obscureth and concealeth the celestial;* so doth the sense dis-

[1] This clause is repeated in the margin, in the transcriber's hand.

cover natural things, but darken and shut up divine. And this appeareth sufficiently in that there is no proceeding in invention of knowledge but by similitude; and God is only self-like, having nothing in common with any creature, otherwise than as in shadow and trope. Therefore attend his will as himself openeth it, and give unto faith that which unto faith belongeth; for more worthy it is to believe than to think or know, considering that in knowledge (as we now are capable of it) the mind suffereth from inferior natures; but in all belief it suffereth from a spirit which it holdeth superior and more authorized than itself.

To conclude, the prejudice hath been infinite that both divine and human knowledge hath received by the intermingling and tempering of the one with the other; as that which hath filled the one full of heresies, and the other full of speculative fictions and vanities.

But now there are again which, in a contrary extremity to those which give to contemplation an over-large scope, do offer too great a restraint to natural and lawful knowledge, being unjustly jealous that every reach and depth of knowledge wherewith their conceits have not been acquainted, should be too high an elevation of man's wit, and a searching and ravelling too far into God's secrets; an opinion that ariseth either of envy (which is proud weakness and to be censured and not confuted), or else of a deceitful simplicity. For if they mean that the ignorance of a second cause doth make men more devoutly to depend upon the providence of God, as supposing the effects to come immediately from his hand, I demand of them, as Job demanded of his friends, *Will you lie for God as man will for man to gratify him?* But if any man without any sinister humour doth indeed make doubt that this digging further and further into the mine of natural knowledge is a thing without example and uncommended in the Scriptures, or fruitless; let him remember and be instructed; for behold it was not that pure light of natural knowledge, whereby man in Paradise was able to give unto every living creature a name according to his propriety, which gave occasion to the fall; but it was an aspiring desire to attain to that part of moral knowledge which defineth of good and evil, whereby to dispute God's commandments and not to depend upon the revelation of his will, which was the original temptation. And the first holy records, which within those brief memorials of things which passed before the flood entered few things as worthy to be registered but only lineages [2] and propagations, yet nevertheless honour the remembrance of the inventor both of music and works in metal. Moses again (who was the reporter) is said to have been seen in all the Egyptian learning, which nation was early and leading in matter of knowledge. And Salomon the king, as out of a branch of his wisdom extraordinarily petitioned and granted from God, is said to have written a natural history of all that is green, from the cedar to the moss (which is but a rudiment between putrefaction and an herb), and also of all that liveth and moveth. And if the book of Job be turned over, it will be found to have much aspersion of natural philosophy. Nay, the same Salomon the king affirmeth directly that 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; for in naming the king he intendeth man, taking such a condition of man as hath most excellency and greatest commandment of wits and means, alluding also to his own person, being truly one of those clearest burning lamps, whereof himself speaketh in another place, when he saith *The spirit of man is as the lamp of God, wherewith he searcheth all inwardness*; which nature of the soul the same Salomon holding precious and inestimable, and therein conspiring with the affection of Socrates, who scorned the pretended learned men of his time for raising great benefit of their learning (whereas Anaxagoras contrariwise and divers others being born to ample patrimonies decayed them in contemplation), delivereth it in precept yet remaining, *Buy the truth, and sell it not; and so of wisdom and knowledge.*

And lest any man should retain a scruple as if this thirst of knowledge were rather an humour of the mind than an emptiness or want in nature and an instinct from God, the same author defineth of it fully, saying, *God hath made every thing*

[2] *linages* in original. See a note to *The New Atlantis*, near middle.

in beauty according to season ; also he hath set the world in man's heart, yet can he not 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 glass capable of the image of the universal world, joying to receive the signature thereof as the eye is of light, yea not only satisfied in beholding the variety of things and vicissitude of times, but raised also to find out and discern those ordinances and decrees which throughout all these changes are infallibly observed. And although the highest generality of motion or summary law of nature God should still reserve within his own curtain, yet many and noble are the inferior and secondary operations which are within man's sounding. This is a thing which I cannot tell whether I may so plainly speak as truly conceive, that as all knowledge appeareth to be a plant of God's own planting, so it may seem the spreading and flourishing, or at least the bearing and fructifying of this plant, by a providence of God, nay not only by a general providence but by a special prophecy, was appointed to this autumn of the world : for to my understanding it is not violent to the letter, and safe now after the event, so to interpret that place in the prophecy of Daniel where speaking of the latter times it is said, *Many shall pass to and fro, and science shall be increased ;* as if the opening of the world by navigation and commerce and the further discovery of knowledge should meet in one time or age.

But howsoever that be, there are besides the authorities of Scriptures before recited, two reasons of exceeding great weight and force why religion should dearly protect all increase of natural knowledge : the one, because it leadeth to the greater exaltation of the glory of God ; for as the Psalms and other Scriptures do often invite us to consider and to magnify the great and wonderful works of God, so if we should rest only in the contemplation of those shews which first offer themselves to our senses, we should do a like injury to the majesty of God, as if we should judge of the store of some excellent jeweller by that only which is set out to the street in his shop. The other reason is, because it is a singular help and a preservative against unbelief and error ; for, saith our Saviour, *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 ; for that latter book will certify us that nothing which the first teacheth shall be thought impossible. And most sure it is, and a true conclusion of experience, that a little natural philosophy inclineth the mind to atheism, but a further proceeding bringeth the mind back to religion.

To conclude then, let no man presume to check the liberality of God's gifts, who, as was said, *hath set the world in man's heart.* So as whatsoever is not God but parcel of the world, he hath fitted it to the comprehension of man's mind, if man will open and dilate the powers of his understanding as he may.

But yet evermore it must be remembered that the least part of knowledge passed to man by this so large a charter from God must be subject to that use for which God hath granted it ; which is the benefit and relief of the state and society of man ; for otherwise all manner of knowledge becometh malign and serpentine, and therefore as carrying the quality of the serpent's sting and malice it maketh the mind of man to swell ; as the Scripture saith excellently, *knowledge bloweth up, but charity buildeth up.* And again the same author doth notably disavow both power and knowledge such as is not dedicated to goodness or love, for saith he, *If I have all faith so as I could remove mountains* (there is power active), *if I render my body to the fire* (there is power passive), *if I speak with the tongues of men and angels* (there is knowledge, for language is but the conveyance of knowledge), *all were nothing.*

And therefore it is not the pleasure of curiosity, nor the quiet of resolution, nor the raising of the spirit, nor victory of wit, nor faculty of speech, nor lucre of profession, nor ambition of honour or fame, nor inablement for business, that are the true ends of knowledge ; some of these being more worthy than other, though all inferior and degenerate : but it is a restitution and reinvesting (in great part) of man to the sovereignty and power (for whensoever he shall be able to call the creatures by their true names he shall again command them) which he had in his first state of creation. And to speak plainly and clearly, it is a discovery of al

operations and possibilities of operations from immortality (if it were possible) to the meanest mechanical practice. And therefore knowledge that tendeth but to satisfaction is but as a courtesan, which is for pleasure and not for fruit or generation. And knowledge that tendeth to profit or profession or glory is but as the golden ball thrown before Atalanta, which while she goeth aside and stoopeth to take up she hindereth the race. And knowledge referred to some particular point of use is but as Harmodius which putteth down one tyrant, and not like Hercules who did perambulate the world to suppress tyrants and giants and monsters in every part [3]. It is true, that in two points the curse is peremptory and not to be removed; the one that vanity must be the end in all human effects, eternity being resumed, though the revolutions and periods may be delayed. The other that the consent of the creature being now turned into reluctation, this power cannot otherwise be exercised and administered but with labour, as well in inventing as in executing; yet nevertheless chiefly that labour and travel which is described by the sweat of the brows more than of the body; that is such travel as is joined with the working and discursion of the spirits in the brain: for as Salomon saith excellently, *The fool putteth to more strength, but the wise man considereth which way*, signifying the election of the mean to be more material than the multiplication of endeavour. It is true also that there is a limitation rather potential than actual, which is when the effect is possible, but the time or place yieldeth not the matter or basis whereupon man should work. But notwithstanding these precincts and bounds, let it be believed, and appeal thereof made to *Time* (with renunciation nevertheless to all the vain and abusing promises of Alchemists and Magicians, and such like light, idle, ignorant, credulous, and fantastical wits and sects), that the new-found world of land was not greater addition to the ancient continent than there remaineth at this day a world of inventions and sciences unknown, having respect to those that are known, with this difference, that the ancient regions of knowledge will seem as barbarous compared with the new, as the new regions of people seem barbarous compared to many of the old.

The dignity of this end (of endowment of man's life with new commodities) appeareth by the estimation that antiquity made of such as guided thereunto. For whereas founders of states, lawgivers, extirpers of tyrants, fathers of the people, were honoured but with the titles of Worthies or Demigods, inventors were ever consecrated amongst the Gods themselves. And if the ordinary ambitions of men lead them to seek the amplification of their own power in their countries, and a better ambition than that hath moved men to seek the amplification of the power of their own countries amongst other nations, better again and more worthy must that aspiring be which seeketh the amplification of the power and kingdom of mankind over the world; the rather because the other two prosecutions are ever culpable of much perturbation and injustice; but this is a work truly divine, which cometh *in aura leni*, without noise or observation.

The access also to this work hath been by that port or passage, which the divine Majesty (who is unchangeable in his ways) doth infallibly continue and observe; that is the felicity wherewith he hath blessed an humility of mind, such as rather laboureth to spell and so by degrees to read in the volumes of his creatures, than to solicit and urge and as it were to invocate a man's own spirit to divine and give oracles unto him. For as in the inquiry of divine truth, the pride of men hath ever inclined to leave the oracles of God's word and to vanish in the mixture of their own inventions; so in the self-same manner, in inquisition of nature they have ever left the oracles of God's works, and adored the deceiving and deformed imagery which the unequal mirrors of their own minds have represented unto them. Nay it is a point fit and necessary in the front and beginning of this work without hesitation or reservation to be professed, that it is no less true in this kingdom of knowledge than in God's kingdom of heaven, that no man shall enter into it *except he become first as a little child* [4].

[3] The words "that is, man's miseries and necessities," which followed in the transcript, have a line drawn through them.

[4] This chapter ends at the top of a new page. The rest is left blank.

Of the impediments of knowledge, being the 4th [5] chapter, the preface only of it.

In some things it is more hard to attempt than to achieve, which falleth out when the difficulty is not so much in the matter or subject, as it is in the crossness and indisposition of the mind of man to think of any such thing, to will or to resolve it. And therefore Titus Livius in his declamatory digression wherein he doth depress and extenuate the honour of Alexander's conquests saith, *Nihil aliud quam bene ausus vana contemnere :* in which sort of things it is the manner of men first to wonder that any such thing should be possible, and after it is found out to wonder again how the world should miss it so long. Of this nature I take to be the invention and discovery of knowledge, etc.

The impediments which have been in the times, and in diversion of wits, being the 5th chapter [6], a small fragment in the beginning of that chapter.

The encounters of the times have been nothing favourable and prosperous for the invention of knowledge ; so as it is not only the daintiness of the seed to take, and the ill mixture and unliking of the ground to nourish or raise this plant, but the ill season also of the weather by which it hath been checked and blasted. Especially in that the seasons have been proper to bring up and set forward other more hasty and indifferent plants, whereby this of knowledge hath been starved and overgrown ; for in the descent of times always there hath been somewhat else in reign and reputation, which hath generally alienated and diverted wits and labours from that employment.

For as for the uttermost antiquity, which is like fame that muffles her head and tells tales, I cannot presume much of it ; for I would not willingly imitate the manner of those that describe maps, which when they come to some far countries whereof they have no knowledge, set down how there be great wastes and deserts there : so I am not apt to affirm that they knew little, because what they knew is little known to us. But if you will judge of them by the last traces that remain to us, you will conclude, though not so scornfully as Aristotle doth, that saith our ancestors were extreme gross, as those that came newly from being moulded out of the clay or some earthly substance ; yet reasonably and probably thus, that it was with them in matter of knowledge but as the dawning or break of day. For at that time the world was altogether home-bred, every nation looked little beyond their own confines or territories, and the world had no through lights then, as it hath had since by commerce and navigation, whereby there could neither be that contribution of wits one to help another, nor that variety of particulars for the correcting of customary conceits.

And as there could be no great collection of wits of several parts or nations, so neither could there be any succession of wits of several times, whereby one might refine the other, in regard they had not history to any purpose. And the manner of their traditions was utterly unfit and unproper for amplification of knowledge. And again the studies of those times, you shall find, besides wars, incursions, and rapines, which were then almost every where betwixt states adjoining (the use of leagues and confederacies being not then known), were to populate by multitude of wives and generation, a thing at this day in the waster part of the West-Indies principally affected ; and to build sometimes for habitation towns and cities, sometimes for fame and memory monuments, pyramids, colosses, and the like. And if there happened to rise up any more civil wits [7] ; then would he found and erect some new laws, customs, and usages, such as now of late years, when the world was revolute almost to the like rudeness and obscurity, we see both in our own nation and abroad many examples of, as well in a number of tenures reserved upon men's lands, as in divers customs of towns and manors, being the devices that such wits wrought upon in such times of deep ignorance, etc. [8].

[5] The word "third" has a line drawn through it, and 4th is written over it in Bacon's hand.

[6] Originally "being the fourth chapter the beginning" : the correction all in Bacon's hand.

[7] *witts* in MS. Probably a mistake for *witte*.

[8] The "etc." in Bacon's hand.

The impediments of knowledge for want of a true succession of wits, and that hitherto the length of one man's life hath been the greatest measure of knowledge, being the 6th chapter, the whole chapter [9].

In arts mechanical the first device comes shortest and time addeth and perfecteth. But in sciences of conceit the first author goeth furthest and time leeseth and corrupteth. Painting, artillery, sailing, and the like, grossly managed at first, by time accommodate and refined. The philosophies and sciences of Aristotle, Plato, Democritus, Hippocrates, of most vigour at first, by time degenerated and imbased. In the former many wits and industries contributed in one: In the latter many men's wits spent to deprave the wit of one.

The error is both in the deliverer and in the receiver. He that delivereth knowledge desireth to deliver it in such form as may be soonest believed, and not as may be easiliest examined. He that receiveth knowledge desireth rather present satisfaction than expectant search, and so rather not to doubt than not to err. Glory maketh the author not to lay open his weakness, and sloth maketh the disciple not to know his strength.

Then begin men to aspire to the second prizes; to be a profound interpreter and commenter, to be a sharp champion and defender, to be a methodical compounder and abridger. And this is the unfortunate succession of wits which the world hath yet had, whereby the patrimony of all knowledge goeth not on husbanded or improved, but wasted and decayed. For knowledge is like a water that will never arise again higher than the level from which it fell; and therefore to go beyond Aristotle by the light of Aristotle is to think that a borrowed light can increase the original light from whom it is taken. So then no true succession of wits having been in the world, either we must conclude that knowledge is but a task for one man's life, and then vain was the complaint that *life is short, and art is long*: or else, that the knowledge that now is, is but a shrub, and not that tree which is never dangerous, but where it is to the purpose of knowing Good and Evil; which desire ever riseth upon an appetite to elect and not to obey, and so containeth in it a manifest defection.

That the pretended succession of wits hath been evil placed, forasmuch as after variety of sects and opinions, the most popular and not the truest prevaileth and weareth out the rest; being the 7th chapter; a fragment [10].

It is sensible to think that when men enter first into search and inquiry, according to the several frames and compositions of their understanding they light upon different conceits, and so all opinions and doubts are beaten over, and then men having made a taste of all wax weary of variety, and so reject the worst and hold themselves to the best, either some one if it be eminent, or some two or three if they be in some equality, which afterwards are received and carried on, and the rest extinct.

But truth is contrary, and that time is like a river which carrieth down things which are light and blown up, and sinketh and drowneth that which is sad and weighty. For howsoever governments have several forms, sometimes one governing, sometimes few, sometimes the multitude; yet the state of knowledge is ever a *Democratie*, and that prevaileth which is most agreeable to the senses and conceits of people. As for example there is no great doubt but he that did put the beginning of things to be *solid, void, and motion to the centre*, was in better earnest than he that put *matter, form, and shift*; or he that put *the mind, motion and matter*. For no man shall enter into inquisition of nature, but shall pass by that opinion of Democritus, whereas he shall never come near the other two opinions, but leave them aloof for the schools and table-talk. Yet those of Aristotle and Plato, because they be both agreeable to popular sense, and the one was

[9] Originally "the fifth chapter": "6th" substituted, and "the whole chapter" added, in Bacon's hand.

[10] Originally "the sixth chapter": "7th" substituted, and "a fragment" added in Bacon's hand.

uttered with subtilty and the spirit of contradiction, and the other with a style of ornament and majesty, did hold out, and the other gave place, etc. [11].

Of the impediments of knowledge in handling it by parts, and in slipping off particular sciences from the root and stock of universal knowledge, being the 8th [12] *chapter*, the whole chapter.

Cicero, the orator, willing to magnify his own profession, and thereupon spending many words to maintain that eloquence was not a shop of good words and elegancies but a treasury and receipt of all knowledges, so far forth as may appertain to the handling and moving of the minds and affections of men by speech, maketh great complaint of the school of Socrates; that whereas before his time the same professors of wisdom in Greece did pretend to teach an universal *Sapience* and knowledge both of matter and words, Socrates divorced them and withdrew philosophy and left rhetoric to itself, which by that destitution became but a barren and unnoble science. And in particular sciences we see that if men fall to subdivide their labours, as to be an oculist in physic, or to be perfect in some one title of the law, or the like, they may prove ready and subtile, but not deep or sufficient, no not in that subject which they do particularly attend, because of that consent which it hath with the rest. And it is a matter of common discourse of the chain of sciences how they are linked together, insomuch as the Grecians, who had terms at will, have fitted it of a name of *Circle Learning*. Nevertheless I that hold it for a great impediment towards the advancement and further invention of knowledge, that particular arts and sciences have been disincorporated from general knowledge, do not understand one and the same thing which Cicero's discourse and the note and conceit of the Grecians in their word *Circle Learning* do intend. For I mean not that use which one science hath of another for ornament or help in practice, as the orator hath of knowledge of affections for moving, or as military science may have use of geometry for fortifications; but I mean it directly of that use by way of supply of light and information which the particulars and instances of one science do yield and present for the framing or correcting of the axioms of another science in their very truth and notion. And therefore that example of *oculists* and *title lawyers* doth come nearer my conceit than the other two; for sciences distinguished have a dependence upon universal knowledge to be augmented and rectified by the superior light thereof, as well as the parts and members of a science have upon the *Maxims* of the same science, and the mutual light and consent which one part receiveth of another. And therefore the opinion of Copernicus in astronomy, which astronomy itself cannot correct because it is not repugnant to any of the appearances, yet natural philosophy doth correct. On the other side if some of the ancient philosophers had been perfect in the observations of astronomy, and had called them to counsel when they made their principles and first axioms, they would never have divided their philosophy as the Cosmographers do their descriptions by globes, making one philosophy for heaven and another for under heaven, as in effect they do.

So if the moral philosophers that have spent such an infinite quantity of debate touching Good and the highest good, had cast their eye abroad upon nature and beheld the appetite that is in all things to receive and to give; the one motion affecting preservation and the other multiplication; which appetites are most evidently seen in living creatures in the pleasure of nourishment and generation; and in man do make the aptest and most natural division of all his desires, being either of sense of pleasure or sense of power; and in the universal frame of the world are figured, the one in the beams of heaven which issue forth, and the other in the lap of the earth which takes in: and again if they had observed the motion of congruity or situation of the parts in respect of the whole, evident in so many particulars; and lastly if they had considered the motion (familiar in attraction

[11] The "etc." in Bacon's hand.

[12] Originally "seventh": "8th" substituted, and "the whole chapter" added in Bacon's hand.

of things) to approach to that which is higher in the same kind; when by these observations so easy and concurring in natural philosophy, they should have found out this quaternion of good, in enjoying or fruition, effecting or operation, consenting or proportion, and approach or assumption; they would have saved and abridged much of their long and wandering discourses of pleasure, virtue, duty, and religion. So likewise in this same logic and rhetoric, or arts [13] of argument and grace of speech, if the great masters of them would but have gone a form lower, and looked but into the observations of Grammar concerning the kinds of words, their derivations, deflexions, and syntax; especially enriching the same with the helps of several languages, with their differing proprieties of words, phrases, and tropes; they might have found out more and better footsteps of common reason, help of disputation, and advantages of cavillation, than many of these which they have propounded. So again a man should be thought to dally, if he did note how the figures of rhetoric and music are many of them the same. The repetitions and traductions in speech and the reports and hauntings of sounds in music are the very same things. Plutarch hath almost made a book of the Lacedæmonian kind of jesting, which joined ever pleasure with distaste. *Sir* (saith a man of art to Philip king of Macedon when he controlled him in his faculty), *God forbid your fortune should be such as to know these things better than I.* In taxing his ignorance in his art he represented to him the perpetual greatness of his fortune, leaving him no vacant time for so mean a skill. Now in music it is one of the ordinariest flowers to fall from a discord or hard tune upon a sweet accord. The figure that Cicero and the rest commend as one of the best points of elegancy, which is the fine checking of expectation, is no less well known to the musicians when they have a special grace in flying the close or cadence. And these are no allusions but direct communities, the same delights of the mind being to be found not only in music, rhetoric, but in moral philosophy, policy, and other knowledges, and that obscure in the one, which is more apparent in the other, yea and that discovered in the one which is not found at all in the other, and so one science greatly aiding to the invention and augmentation of another. And therefore without this intercourse the axioms of sciences will fall out to be neither full nor true; but will be such opinions as Aristotle in some places doth wisely censure, when he saith *These are the opinions of persons that have respect but to a few things.* So then we see that this note leadeth us to an administration of knowledge in some such order and policy as the king of Spain in regard of his great dominions useth in state; who though he hath particular councils for several countries and affairs, yet hath one council of State or last resort, that receiveth the advertisements and certificates from all the rest. Hitherto of the diversion, succession, and conference of wits.

That the end and scope of knowledge hath been generally mistaken, and that men were never well advised what it was they sought; being the 9th chapter, whereof a fragment (which is the end of the same chapter is before [14].

It appeareth then how rarely the wits and labours of men have been converted to the severe and original inquisition of knowledge; and in those who have pretended, what hurt hath been done by the affectation of professors and the distraction of such as were no professors [15]; and how there was never in effect any conjunction or combination of wits in the first and inducing search, but that every man wrought apart, and would either have his own way or else would go no further than his guide, having in the one case the honour of a first, and in the other the ease of a second; and lastly how in the descent and continuance of wits and labours the succession hath been in the most popular and weak opinions, like unto

[13] *acts* in MS., I think.

[14] See p. 194. note 17.; and compare Table of Contents (p. 185.) No. 3. The number of this chapter was not stated in the transcript as it originally stood: the words in Roman characters are all added in Bacon's hand, at the end of the title: nothing is struck out.

[15] This clause is repeated in the margin and marked for insertion in its proper place

the weakest natures which many times have most children, and in them also the condition of succession hath been rather to defend and to adorn than to add; and if to add, yet that addition to be rather a refining of a part than an increase of the whole. But the impediments of time and accidents, though they have wrought a general indisposition, yet are they not so peremptory and binding as the internal impediments and clouds in the mind and spirit of man, whereof it now followeth to speak.

The Scripture speaking of the worst sort of error saith, *Errare fecit eos in invio et non in via.* For a man may wander in the way, by rounding up and down. But if men have failed in their very direction and address that error will never by good fortune correct itself. Now it hath fared with men in their contemplations as Seneca saith it fareth with them in their actions, *De partibus vitæ quisque deliberat, de summa nemo.* A course very ordinary with men who receive for the most part their final ends from the inclination of their nature, or from common example and opinion, never questioning or examining them, nor reducing them to any clear certainty; and use only to call themselves to account and deliberation touching the means and second ends, and thereby set themselves in the right way to the wrong place. So likewise upon the natural curiosity and desire to know, they have put themselves in way without foresight or consideration of their journey's end.

For I find that even those that have sought knowledge for itself, and not for benefit or ostentation or any practical enablement in the course of their life, have nevertheless propounded to themselves a wrong mark, namely satisfaction (which men call truth) and not operation. For as in the courts and services of princes and states it is a much easier matter to give satisfaction than to do the business; so in the inquiring of causes and reasons it is much easier to find out such causes as will satisfy the mind of man and quiet objections, than such causes as will direct him and give him light to new experiences and inventions. And this did Celsus note wisely and truly, how that the causes which are in use and whereof the knowledges now received do consist, were in time minors and subsequents to the knowledge of the particulars out of which they were induced and collected; and that it was not the light of those causes which discovered particulars, but only the particulars being first found, men did fall on glossing and discoursing of the causes; which is the reason why the learning that now is hath the curse of barrenness, and is courtesan-like, for pleasure, and not for fruit [16]. Nay to compare it rightly, the strange fiction of the poets of the transformation of Scylla seemeth to be a lively emblem of this philosophy and knowledge; a fair woman upwards in the parts of show, but when you come to the parts of use and generation, Barking Monsters; for no better are the endless distorted questions, which ever have been, and of necessity must be, the end and womb of such knowledge.

But yet nevertheless [17] here I may be mistaken, by reason of some which have much in their pen the referring sciences to action and the use of man, which mean quite another matter than I do. For they mean a contriving of directions and precepts for readiness of practice, which I discommend not, so it be not occasion that some quantity of the science be lost; for else it will be such a piece of husbandry as to put away a manor lying somewhat scattered, to buy in a close that lieth handsomely about a dwelling. But my intention contrariwise is to increase and multiply the revenues and possessions of man, and not to trim up only or order with conveniency the grounds whereof he is already stated. Wherefore the better to make myself understood that I mean nothing less than words, and directly to demonstrate the point which we are now upon, that is, what is the true end, scope, or office of knowledge, which I have set down to consist not in any plausible, delectable, reverend, or admired discourse, or any satisfactory arguments, but in effecting and working, and in discovery of particulars not revealed

[16] Here in the transcript the chapter ended. The next sentence is written in the margin in Bacon's own hand.

[17] This paragraph, which stands as the third fragment in the order of the transcript, is headed in the transcriber's hand, "*A part of the 9th chapter immediately precedent to the Inventory and inducing the same*".

before for the better endowment and help of man's life; I have thought good to make as it were a Kalendar or Inventory of the wealth, furniture, or means of man according to his present estate, as far as it is known; which I do not to shew any universality of sense or knowledge, and much less to make a satire of reprehension in respect of wants and errors, but partly because cogitations new had need of some grossness and inculcation to make them perceived; and chiefly to the end that for the time to come (upon the account and state now made and cast up) it may appear what increase this new manner of use and administration of the stock (if it be once planted) shall bring with it hereafter; and for the time present (in case I should be prevented by death to propound and reveal this new light [18] as I purpose) yet I may at the least give some awaking note both of the wants in man's present condition and the nature of the supplies to be wished; though for mine own part neither do I much build upon my present *anticipations*, neither do I think ourselves yet learned or wise enough to wish reasonably: for as it asks some knowledge to demand a question not impertinent, so it asketh some sense to make a wish not absurd [19].

The Inventory, or an enumeration and view of inventions already discovered and in use, together with a note of the wants and the nature of the supplies, being the 10*th chapter; and this* a small fragment thereof, being the preface to the Inventory[20].

The plainest method and most directly pertinent to this intention, will be to make distribution of sciences, arts, inventions, works, and their portions, according to the use and tribute which they yield and render to the conditions of man's life, and under those several uses, being as several offices of provisions, to charge and tax what may be reasonably exacted or demanded; not guiding ourselves neither by the poverty of experiences and probations, nor according to the vanity of credulous imaginations; and then upon those charges and taxations to distinguish and present, as it were in several columns, what is extant and already found, and what is defective and further to be provided. Of which provisions, because in many of them after the manner of slothful and faulty officers and accomptants it will be returned (by way of excuse) that no such are to be had, it will be fit to give some light of the nature of the supplies, whereby it will evidently appear that they are to be compassed and procured [21]. And yet nevertheless on the other side again it will be as fit to check and control the vain and void assignations and gifts whereby certain ignorant, extravagant, and abusing wits have pretended to indue the state of man with wonders, differing as much from truth in nature as Cæsar's Commentaries differeth from the acts of King Arthur or Huon of Bourdeaux in story. For it is true that Cæsar did greater things than those idle wits had the audacity to feign their supposed worthies to have done; but he did them not in that monstrous and fabulous manner.

The chapter immediately following the Inventory; being the 11*th in order;* a part thereof [22].

It appeareth then what is now in proposition not by general circumlocution but by particular note. No former philosophy varied in terms or method; no new *placet* or speculation upon particulars already known; no referring to action by any manual of practice; but the revealing and discovering of new inventions and operations. This to be done without the errors and conjectures of art, or the length or difficulties of experience; the nature and kinds of which inventions have been described as they could be discovered; for your eye cannot pass one kenning without further sailing; only we have stood upon the best advantages

[18] *direction* had been written first.

[19] The chapter ends before the bottom of the page; leaving about a fifth of it blank.

[20] The words *fragment only of the same*, with which the original heading ended, have a line drawn through them, and the words in Roman character are added in Bacon's hand.

[21] The concluding sentence, which is crowded into the page and overflows into the margin, has evidently been inserted subsequently to the original transcript. After "procured" there seems to be an "etc.".

[22] The words in Roman letters are inserted in Bacon's hand.

of the notions received, as upon a mount, to shew the knowledges adjacent and confining. If therefore the true end of knowledge not propounded hath bred large error, the best and perfectest condition of the same end not perceived will cause some declination. For when the butt is set up men need not rove, but except the white be placed men cannot level. This perfection we mean not in the worth of the effect, but in the nature of the direction; for our purpose is not to stir up men's hopes, but to guide their travels. The fulness of direction to work and produce any effect consisteth in two conditions, certainty and liberty. Certainty is when the direction is not only true for the most part, but infallible. Liberty is when the direction is not restrained to some definite means, but comprehendeth all the means and ways possible; for the poet saith well *Sapientibus undique latæ sunt viæ*, and where there is the greatest plurality of change, there is the greatest singularity of choice. Besides as a conjectural direction maketh a casual effect, so a particular and restrained direction is no less casual than an uncertain. For those particular means whereunto it is tied may be out of your power or may be accompanied with an overvalue of prejudice; and so if for want of certainty in direction you are frustrated in success, for want of variety in direction you are stopped in attempt. If therefore your direction be certain, it must refer you and point you to somewhat which, if it be present, the effect you seek will of necessity follow, else may you perform and not obtain. If it be free, then must it refer you to somewhat which if it be absent the effect you seek will of necessity withdraw, else may you have power and not attempt. This notion Aristotle had in light, though not in use. For the two commended rules by him set down, whereby the *axioms* of sciences are precepted to be made convertible, and which the latter men have not without elegancy surnamed the one the rule of truth because it preventeth deceit, the other the rule of prudence because it freeth election, are the same thing in speculation and affirmation which we now observe. An example will make my meaning attained, and yet percase make it thought that they attained it not. Let the effect to be produced be *Whiteness;* let the first direction be that if air and water be intermingled or broken in small portions together, whiteness will ensue, as in snow, in the breaking of the waves of the sea and rivers, and the like. This direction is certain, but very particular and restrained, being tied but to air and water. Let the second direction be, that if air be mingled as before with any transparent body, such nevertheless as is uncoloured and more grossly transparent than air itself, that then etc. as glass or crystal, being beaten to fine powder, by the interposition of the air becometh white; the white of an egg being clear of itself, receiving air by agitation becometh white, receiving air by concoction becometh white; here you are freed from water, and advanced to a clear body, and still tied to air. Let the third direction exclude or remove the restraint of an uncoloured body, as in amber, sapphires, etc. which beaten to fine powder become white; in wine and beer, which brought to froth become white. Let the fourth direction exclude the restraint of a body more grossly transparent than air, as in flame, being a body compounded between air and a finer substance than air; which flame if it were not for the smoke, which is the third substance that incorporateth itself and dyeth the flame, would be more perfect white. In all these four directions air still beareth a part. Let the fifth direction then be, that if any bodies, both transparent but in an unequal degree, be mingled as before, whiteness will follow; as oil and water beaten to an ointment, though by settling the air which gathereth in the agitation be evaporate, yet remaineth white; and the powder of glass or crystal put into water, whereby the air giveth place, yet remaineth white, though not so perfect. Now are you freed from air, but still you are tied to transparent bodies. To ascend further by scale I do forbear, partly because it would draw on the example to an over-great length, but chiefly because it would open that which in this work I determine to reserve; for to pass through the whole history and observation of colours and objects visible were too long a digression; and our purpose is now to give an example of a free direction, thereby to distinguish and describe it; and not to set down a form of interpretation how to recover and attain it. But as we intend not now to reveal, so we are circumspect not to mislead and therefore (this warning being given) returning to our purpose in hand, we

admit the sixth direction to be, that all bodies or parts of bodies which are unequal equally, that is in a simple proportion, do represent whiteness [23] ; we will explain this, though we induce it not. It is then to be understood, that absolute equality produceth transparence, inequality in simple order or proportion produceth whiteness, inequality in compound or respective order or proportion produceth all other colours, and absolute or orderless inequality produceth blackness ; which diversity, if so gross a demonstration be needful, may be signified by four tables ; a blank, a chequer, a fret, and a medley ; whereof the fret is evident to admit great variety. Out of this assertion are satisfied a multitude of effects and observations, as that whiteness and blackness are most incompatible with transparence ; that whiteness keepeth light, and blackness stoppeth light, but neither passeth it ; that whiteness or blackness are never produced in rainbows, diamonds, crystals, and the like ; that white giveth no dye, and black hardly taketh dye ; that whiteness seemeth to have an affinity with dryness, and blackness with moisture ; that adustion causeth blackness, and calcination whiteness ; that flowers are generally of fresh colours, and rarely black, etc. All which I do now mention confusedly by way of derivation and not by way of induction. This sixth direction, which I have thus explained, is of good and competent liberty for whiteness fixed and inherent, but not for whiteness fantastical or appearing, as shall be afterwards touched. But first do you need a reduction back to certainty or verity ; for it is not all position or contexture of unequal bodies that will produce colour ; for *aqua fortis*, oil of *vitriol*, etc. more manifestly, and many other substances more obscurely, do consist of very unequal parts, which yet are transparent and clear. Therefore the reduction must be, that the bodies or parts of bodies so intermingled as before be of a certain grossness or magnitude ; for the unequalities which move the sight must have a further dimension and quantity than those which operate many other effects. Some few grains of saffron will give a tincture to a ton of water ; but so many grains of civet will give a perfume to a whole chamber of air. And therefore when Democritus (from whom Epicurus did borrow it) held that the position of the solid portions was the cause of colours, yet in the very truth of his assertion he should have added, that the portions are required to be of some magnitude. And this is one cause why colours have little inwardness and necessitude with the nature and proprieties of things, those things resembling in colour which otherwise differ most, as salt and sugar, and contrariwise differing in colour which otherwise resemble most, as the white and blue violets, and the several veins of one agate or marble, by reason that other virtues consist in more subtile proportions than colours do ; and yet are there virtues and natures which require a grosser magnitude than colours, as well as scents and divers other require a more subtile ; for as the portion of a body will give forth scent which is too small to be seen, so the portion of a body will shew colours which is too small to be endued with weight ; and therefore one of the prophets with great elegancy describing how all creatures carry no proportion towards God the creator, saith, *That all the nations in respect of him are like the dust upon the balance*, which is a thing appeareth but weigheth not. But to return, there resteth a further freeing of this sixth direction ; for the clearness of a river or stream sheweth white at a distance, and crystalline glasses deliver the face or any other object falsified in whiteness, and long beholding the snow to a weak eye giveth an impression of azure rather than of whiteness. So as for whiteness in apparition only and representation by the qualifying of the light, altering the *intermedium*, or affecting the eye itself, it reacheth not. But you must free your direction to the producing of such an incidence, impression, or operation, as may cause a precise and determinate passion of the eye ; a matter which is much more easy to induce than that which we have passed through ; but yet because it hath a full coherence both with that act of radiation (which hath hitherto been con-

[23] Compare *De Aug.* iii. 4. "At in Metaphysicâ, si fiat inquisitio, hujusmodi quidpiam reperies ; Corpora duo Diaphana intermixta, Portionibus eorum Opticis simplici ordine sive æqualiter collocatis, constituere Albedinem." And observe that this sentence is not to be found in the corresponding passage of the *Advancement of Learning*, but is interpolated in the translation.

ceived and termed so unproperly and untruly by some an effluxion of spiritual species and by others an investing of the *intermedium* with a motion which successively is conveyed to the eye) and with the act of sense, wherein I should likewise open that which I think good to withdraw, I will omit. Neither do I contend but that this motion which I call the freeing of a direction, in the received philosophies (as far as a swimming anticipation could take hold) might be perceived and discerned; being not much other matter than that which they did not only aim at in the two rules of *Axioms* before remembered, but more nearly also in [24] that which they term the form or formal cause, or that which they call the true difference; both which nevertheless it seemeth they propound rather as impossibilities and wishes than as things within the compass of human comprehension. For Plato casteth his burden and saith *that he will revere him as a God, that can truly divide and define* [25]; which cannot be but by true forms and differences. Wherein I join hands with him, confessing as much as yet assuming to myself little; for if any man can by the strength of his *anticipations* find our forms, I will magnify him with the foremost. But as any of them would say that if divers things which many men know by instruction and observation another knew by revelation and without those means, they would take him for somewhat supernatural and divine; so I do acknowledge that if any man can by anticipations reach to that which a weak and inferior wit may attain to by interpretation, he cannot receive too high a title. Nay I for my part do indeed admire to see how far some of them have proceeded by their *anticipations;* but how? it is as I wonder at some blind men, to see what shift they make without their eye-sight; thinking with myself that if I were blind I could hardly do it. Again, Aristotle's school confesseth that there is no true knowledge but by causes, no true cause but the form, no true form known except one, which they are pleased to allow; and therefore thus far their evidence standeth with us, that both hitherto there hath been nothing but a shadow of knowledge, and that we propound now that which is agreed to be worthiest to be sought, and hardest to be found. There wanteth now a part very necessary, not by way of supply but by way of caution; for as it is seen for the most part that the outward tokens and badges of excellency and perfection are more incident to things merely counterfeit than to that which is true, but for [26] a meaner and baser sort; as a dubline is more like a perfect ruby than a spinel, and a counterfeit angel is made more like a true angel than if it were an angel coined of China gold; in like manner the direction carrieth a resemblance of a true direction in verity and liberty which indeed is no direction at all. For though your direction seem to be certain and free by pointing you to a nature that is unseparable from the nature you inquire upon, yet if it do not carry you on a degree or remove nearer to action, operation, or light to make or produce, it is but superficial and counterfeit. Wherefore to secure and warrant what is a true direction, though that general note I have given be perspicuous in itself (for a man shall soon cast with himself whether he be ever the nearer [27] to effect and operate or no, or whether he have won but an abstract or varied notion) yet for better instruction I will deliver three particular notes of caution. The first is that the nature discovered be more original than the nature supposed, and not more secondary or of the like degree; as to make a stone bright or to make it smooth it is a good direction to say, make it even; but to make a stone even it is no good direction to say, make it bright or make it smooth; for the rule is that the disposition of any thing referring to the state of it in itself or the parts, is more original than that which is relative or transitive towards another thing. So evenness is the disposition of the stone in itself, but smooth is to the hand and bright to the eye, and yet nevertheless they all cluster and concur; and yet the direction is more unperfect, if it do appoint you to such a relative as is in the same kind and not in a diverse. For in the direction to produce brightness by smoothness, although properly it win no degree, and will never teach you any new particulars before unknown; yet by way of suggestion or bringing to mind it may draw your consideration to some particulars known but not remembered; as you shall sooner

[24] *than* in MS.
[25] See *Nov. Org.* ii. 26.
[26] So MS. qu. *of*?
[27] *neare* MS.

remember some practical means of making smoothness, than if you had fixed your consideration only upon brightness ; but if the direction had been to make brightness by making reflexion, as thus, make it such as you may see your face in it, this is merely secondary, and helpeth neither by way of informing nor by way of suggestion. So if in the inquiry of whiteness you were directed to make such a colour as should be seen furthest in a dark light ; here you are advanced nothing at all. For these kinds of natures are but proprieties, effects, circumstances, concurrences, or what else you shall like to call them, and not radical and formative natures towards the nature supposed. The second caution is that the nature inquired be collected by division before composition, or to speak more properly, by composition subaltern before you ascend to composition absolute, etc.[28].

Of the internal and profound errors and superstitions in the nature of the mind and of the four sorts of idols or fictions which offer themselves to the understanding in the inquisition of knowledge ; being the 16th chapter, and this a small fragment thereof, being a preface to the inward elenches of the mind[29].

The opinion of Epicurus that the gods were of human shape, was rather justly derided than seriously confuted by the other sects, demanding whether every kind of sensible creatures did not think their own figure fairest, as the horse, the bull, and the like, which found no beauty but in their own forms, as in appetite of lust appeared. And the heresy of the Anthropomorphites was ever censured for a gross conceit bred in the obscure cells of solitary monks that never looked abroad. Again the fable so well known of *Quis pinxit leonem*, doth set forth well that there is an error of pride and partiality, as well as of custom and familiarity. The reflexion also from glasses so usually resembled to the imagery of the mind, every man knoweth to receive error and variety both in colour, magnitude and shape, according to the quality of the glass. But yet no use hath been made of these and many the like observations, to move men to search out and upon search to give true cautions of the native and inherent errors in the mind of man which have coloured and corrupted all his notions and impressions.

I do find therefore in this enchanted glass four Idols or false appearances of several and distinct sorts, every sort comprehending many subdivisions : the first sort, I call Idols of the *Nation* or *Tribe ;* the second, idols of the *Palace ;* the third, idols of the *Cave ;* and the fourth, idols of the *Theatre*, etc.[30].

Here followeth an abridgment of divers chapters of the first book of Interpretation of Nature [31].

CAP. 12.

That in deciding and determining of the truth of knowledge, men have put themselves upon trials not competent. That antiquity and authority ; common and confessed notions ; natural and yielding consent of the mind ; the harmony and coherence of a knowledge in itself ; the establishing of principles with the touch and reduction of other propositions unto them ; inductions without instances contradictory ; and the report of the senses ; are none of them absolute and infallible evidence of truth, and bring no security sufficient for effects and operations. That the discovery of new works and active directions not known before, is the only trial to be accepted of ; and yet not that neither, in case where one particular giveth light to another ; but where particulars induce an axiom of observation, which axiom found out discovereth and designeth new particulars. That the nature of this trial is not only upon the point, whether the knowledge be

[28] The word " subaltern " (for which a blank was left by the transcriber) and the " etc." have been inserted by Bacon. The chapter ends nearly at the bottom of the page.

[29] The words in Roman character have been added by Bacon.

[30] The " etc." in Bacon's hand. The chapter ends in the middle of the second page, and the heading of the next (which is the 4th), follows immediately ; whence I infer that the whole formed part of the original transcript.

[31] The words " Interpretation of Nature " added in Bacon's hand.

profitable or no, but even upon the point whether the knowledge be true or no; not because you may always conclude that the Axiom which discovereth new instances is true, but contrariwise you may safely conclude that if it discover not any new instance it is in vain and untrue. That by new instances are not always to be understood new recipes but new assignations, and of the diversity between these two. That the subtilty of words, arguments, notions, yea of the senses themselves, is but rude and gross in comparison of the subtilty of things; and of the slothful and flattering opinions of those which pretend to honour the mind of man in withdrawing and abstracting it from particulars, and of the inducements and motives whereupon such opinions have been conceived and received.

Cap. 13.

Of the error in propounding chiefly the search of causes and productions of things concrete, which are infinite and transitory, and not of abstract natures, which are few and permanent. That these natures are as the alphabet or simple letters, whereof the variety of things consisteth; or as the colours mingled in the painter's shell, wherewith he is able to make infinite variety of faces or shapes [32]. An enumeration of them according to popular note. That at the first one would conceive that in the schools by natural philosophy were meant the knowledge of the efficients of things concrete; and by metaphysic the knowledge of the forms of natures simple; which is a good and fit division of knowledge: but upon examination there is no such matter by them intended. That the little inquiry into the production of simple natures sheweth well that works were not sought; because by the former knowledge some small and superficial deflexions from the ordinary generations and productions may be found out, but the discovery of all profound and radical alteration must arise out of the latter knowledge.

Cap. 14.

Of the error in propounding the search of the materials or dead beginnings of principles of things, and not the nature of motions, inclinations, and applications That the whole scope of the former search is mpertinent and vain; both because there are no such beginnings, and if there were they could not be known. That the latter manner of search (which is all) they pass over compendiously and slightly as a by-matter. That the several conceits in that kind, as that the lively and moving beginnings of things should be shift or appetite of matter to privation; the spirit of the world working in matter according to platform; the proceeding or fructifying of distinct kinds according to their proprieties; the intercourse of the elements by mediation of their common qualities; the appetite of like portions to unite themselves; amity and discord, or sympathy and antipathy; motion to the centre, with motion of stripe or press; the casual agitation, aggregation, and essays of the solid portions in the void space; motion of shuttings and openings; are all mere nugations; and that the calculating and ordination of the true degrees, moments, limits, and laws of motions and alterations (by means whereof all works and effects are produced), is a matter of a far other nature than to consist in such easy and wild generalities.

Cap. 15.

Of the great error of inquiring knowledge in Anticipations. That I call Anticipations the voluntary collections that the mind maketh of knowledge, which is every man's reason. That though this be a solemn thing, and serves the turn to negotiate between man and man (because of the conformity and participation of men's minds in the like errors), yet towards inquiry of the truth of things and works it is of no value. That civil respects are a lett that this pretended reason should not be so contemptibly spoken of as were fit and medicinable, in regard that [33] hath been too much exalted and glorified, to the

[32] This last illustration is added in the margin in Bacon's hand.

[33] So MS. by mistake probably for *it*; the transcriber taking *yt* for *y^e*.

infinite detriment of man's estate. Of the nature of words and their facility and aptness to cover and grace the defects of Anticipations. That it is no marvel if these Anticipations have brought forth such diversity and repugnance in opinions, theories, or philosophies, as so many fables [34] of several arguments. That had not the nature of civil customs and government been in most times somewhat adverse to such innovations, though contemplative, there might have been and would have been many more. That the second school of the Academics and the sect of Pyrrho, or the considerers that denied comprehension, as to the disabling of man's knowledge (entertained in Anticipations) is well to be allowed, but that they ought when they had overthrown and purged the floor of the ruins to have sought to build better in place. And more especially that they did unjustly and prejudicially to charge the deceit upon the report of the senses, which admitteth very sparing remedy; being indeed to have been charged upon the Anticipations of the mind, which admitteth a perfect remedy. That the information of the senses is sufficient, not because they err not, but because the use of the sense in discovering of knowledge is for the most part not immediate. So that it is the work, effect, or instance, that trieth the Axiom, and the sense doth but try the work done or not done, being or not being. That the mind of man in collecting knowledge needeth great variety of helps, as well as the hand of man in manual and mechanical practices needeth great variety of instruments. And that it were a poor work that, if instruments were removed, men would overcome with their naked hands. And of the distinct points of want and insufficiency in the mind of man.

Cap. 16.

That the mind of a man, as it is not a vessel of that content or receipt to comprehend knowledge without helps and supplies, so again it is not sincere, but of an ill and corrupt tincture. Of the inherent and profound errors and superstitions in the nature of the mind, and of the four sorts of Idols or false appearances that offer themselves to the understanding in the inquisition of knowledge; that is to say, the Idols of the Tribe, the Idols of the Palace, the Idols of the Cave, and the Idols of the Theatre. That these four, added to the incapacity of the mind and the vanity and malignity of the affections, leave nothing but impotency and confusion. A recital of the particular kinds of these four Idols, with some chosen examples of the opinions they have begot, such of them as have supplanted the state of knowledge most.

Cap. 17.

Of the errors of such as have descended and applied themselves to experience, and attempted to induce knowledge upon particulars. That they have not had the resolution and strength of mind to free themselves wholly from Anticipations, but have made a confusion and intermixture of Anticipations and observations, and so vanished. That if any have had the strength of mind generally to purge away and discharge all Anticipations, they have not had the greater and double strength and patience of mind, as well to repel new Anticipations after the view and search of particulars, as to reject old which were in their mind before; but have from particulars and history flown up to principles without the mean degrees, and so framed all the middle generalities or axioms, not by way of scale or ascension from particulars, but by way of derivation from principles; whence hath issued the infinite chaos of shadows and notions [35], wherewith both books and minds have [36] been hitherto, and may be yet hereafter much more pestered. That in the course of those derivations, to make them yet the more unprofitable, they have used when any light of new instance opposite to any assertion appeared, rather to reconcile the instance than to amend the rule. That if any have had

[34] *fable* in MS.

[35] This word is written between the lines in Bacon's hand, and I am not sure that I read it right. Stephens read it *moths*, which is certainly wrong. It is more like *nocons* than any word I can think of.

[36] *hath* in MS.

or shall have the power and resolution to fortify and inclose his mind against all Anticipations, yet if he have not been or shall not be cautioned by the full understanding of the nature of the mind and spirit of man, and therein of the seats pores and passages both of knowledge and error, he hath not been nor shall not be possibly able to guide or keep on his course aright. That those that have been conversant in experience and observation have used, when they have intended to discover the cause of any effect, to fix their consideration narrowly and exactly upon that effect itself with all the circumstances thereof, and to vary the trial thereof as many ways as can be devised; which course amounteth but to a tedious curiosity, and ever breaketh off in wondering and not in knowing; and that they have not used to enlarge their observation to match and sort that effect with instances of a diverse subject, which [37] must of necessity be before any cause be found out. That they have passed over the observation of instances vulgar and ignoble, and stayed their attention chiefly upon instances of mark; whereas the other sort are for the most part more significant and of better light and information. 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 of the natures the effect is to be ascribed, and yet notwithstanding they have taken a course without breaking particulars and reducing them by exclusions and inclusions to a definite point, to conclude upon inductions in gross, which empirical course is no less vain than the scholastical. That all such as have sought action and work out of their inquiry have been hasty and pressing to discover some practices for present use, and not to discover Axioms, joining with them the new assignations as their sureties. That the forerunning of the mind to frame recipes upon Axioms at the entrance is like Atalanta's golden ball that hindereth and interrupteth the course, and is to be inhibited till you have ascended to a certain stage and degree of generalities; which forbearance will be liberally recompensed in the end; and that chance discovereth new inventions by one and one, but science by knots and clusters. That they have not collected sufficient quantity of particulars, nor them in sufficient certainty and subtilty, nor of all several kinds, nor with those advantages and discretions in the entry and sorting which are requisite; and of the weak manner of collecting natural history which hath been used. Lastly that they had no knowledge of the formulary of interpretation, the work whereof is to abridge experience and to make things as certainly found out by Axiom in short time, as by infinite experience in ages.

Cap. 18.

That the cautels and devices put in practice in the delivery of knowledge for the covering and palliating of ignorance, and the gracing and overvaluing of that they utter, are without number; but none more bold and more hurtful than two; the one that men have used of a few observations upon any subject to make a solemn and formal art, by filling it up with discourse, accommodating it with some circumstances and directions to practice, and digesting it into method, whereby men grow satisfied and secure, as if no more inquiry were to be made of that matter; the other, that men have used to discharge ignorance with credit, in defining all those effects which they cannot attain unto to be out of the compass of art and human endeavour. That the very styles and forms of utterance are so many characters of imposture, some choosing a style of pugnacity and contention, some of satire and reprehension, some of plausible and tempting similitudes and examples, some of great words and high discourse, some of short and dark sentences, some of exactness of method, all of positive affirmation, without disclosing the true motives and proofs of their opinions, or free confessing their ignorance or doubts, except it be now and then for a grace, and in cunning to win the more credit in the rest, and not in good faith. That although men be free from these errors and incumbrances in the will and affection, yet it is

[37] The words " according to their own rules " follow in the MS., but a line is drawn through them.

not a thing so easy as is conceived to convey the conceit of one man's mind into the mind of another without loss or mistaking, specially in notions new and differing from those that are received. That never any knowledge was delivered in the same order it was invented, no not in the mathematic, though it should seem otherwise in regard that the propositions placed last do use the propositions or grants placed first for their proof and demonstration. That there are forms and methods of tradition wholly distinct and differing, according to their ends whereto they are directed. That there are two ends of tradition of knowledge, the one to teach and instruct for use and practice, the other to impart or intimate for re-examination and progression. That the former of these ends requireth a method not the same whereby it was invented and induced, but such as is most compendious and ready whereby it may be used and applied. That the latter of the ends, which is where a knowledge is delivered to be continued and spun on by a succession of labours, requireth a method whereby it may be transposed to another in the same manner as it was collected, to the end it may be discerned both where the work is weak, and where it breaketh off. That this latter method is not only unfit for the former end, but also impossible for all knowledge gathered and insinuated by Anticipations, because the mind working inwardly of itself, no man can give a just account how he came to that knowledge which he hath received, and that therefore this method is peculiar for knowledge gathered by interpretation. That the discretion anciently observed, though by the precedent of many vain persons and deceivers disgraced, of publishing part, and reserving part to a private succession, and of publishing in a manner whereby it shall not be to the capacity nor taste of all, but shall as it were single and adopt his reader, is not to be laid aside, both for the avoiding of abuse in the excluded, and the strengthening of affection in the admitted. That there are other virtues of tradition, as that there be no occasion given to error, and that it carry a vigour to root and spread against the vanity and injuries of time; all which if they were ever due to any knowledge delivered, or if they were never due to any human knowledge heretofore delivered, yet are now due to the knowledge propounded.

Cap. 19.

Of the impediments which have been in the affections, the principle whereof hath been despair or diffidence, and the strong apprehension of the difficulty, obscurity, and infiniteness which belongeth to the invention of knowledge, and that men have not known their own strength, and that the supposed difficulties and vastness of the work is rather in shew and muster than in state or substance where the true way is taken. That this diffidence hath moved and caused some never to enter into search, and others when they have been entered either to give over or to seek a more compendious course than can stand with the nature of true search. That of those that have refused and prejudged inquiry, the more sober and grave sort of wits have depended upon authors and traditions, and the more vain and credulous resorted to revelation and intelligence with spirits and higher natures. That of those that have entered into search, some having fallen upon some conceits which they after consider to be the same which they have found in former authors, have suddenly taken a persuasion that a man shall but with much labour incur and light upon the same inventions which he might with ease receive from others; and that it is but a vanity and self-pleasing of the wit to go about again, as one that would rather have a flower of his own gathering, than much better gathered to his hand. That the same humour of sloth and diffidence suggesteth that a man shall but revive some ancient opinion which was long ago propounded, examined, and rejected. And that it is easy to err in conceit that a man's observation or notion is the same with a former opinion, both because new conceits must of necessity be uttered in old words, and because [38] upon true and erroneous grounds men may meet in consequence or

[38] A parenthesis " (as the Schools well know) " which follows here, has a line drawn through it.

conclusion, as several lines or circles that cut in some one point. That the greatest part of those that have descended into search have chosen for the most artificial and compendious course to induce principles out of particulars, and to reduce all other propositions unto principles ; and so instead of the nearest way, have been led to no way or a mere labyrinth. That the two contemplative ways have some resemblance with the old parable of the two moral ways, the one beginning with incertainty and difficulty and ending in plainness and certainty, and the other beginning with shew of plainness and certainty, and ending in difficulty and incertainty. Of the great and manifest error and untrue conceit or estimation of the infiniteness of particulars, whereas indeed all prolixity is in discourse and derivations ; and of the infinite and most laborious expence of wit that hath been employed upon toys and matters of no fruit or value. That although the period of one age cannot advance men to the furthest point of interpretation of nature (except the work should be undertaken with greater helps than can be expected,) yet it cannot fail in much less space of time to make return of many singular commodities towards the state and occasions of man's life. That there is less reason of distrust in the course of interpretation now propounded than in any knowledge formerly delivered, because this course doth in sort equal men's wits, and leaveth no great advantage or pre-eminence to the perfect and excellent motions of the spirit. That to draw a straight line or to make a circle perfect round by aim of hand only, there must be a great difference between an unsteady and unpractised hand and a steady and practised, but to do it by rule or compass it is much alike.

CAP. 21.

Of the impediments which have been in the two extreme humours of admiration of antiquity and love of novelty, and again of over-servile reverence or over light scorn of the opinions of others.

CAP. 22.

Of the impediments which have been in the affection of pride, specially of one kind, which is the disdain of dwelling and being conversant much in experiences and particulars, specially such as are vulgar in occurrency, and base and ignoble in use. That besides certain higher mysteries of pride, generalities seem to have a dignity and solemnity, in that they do not put men in mind of their familiar actions, in that they have less affinity with arts mechanical and illiberal, in that they are not so subject to be controuled by persons of mean observation, in that they seem to teach men that they know not, and not to refer them to that they know. All which conditions directly feeding the humour of pride, particulars do want. That the majesty of generalities and the divine nature of the mind in taking them (if they be truly collected, and be indeed the direct reflexions of things), cannot be too much magnified. And that it is true that interpretation is the very natural and direct intention, action, and progression of the understanding delivered from impediments. And that all Anticipation is but a deflexion or declination by accident.

CAP. 25.

Of the impediments which have been in the state of heathen religion and other superstitions and errors of religion. And that in the true religion there hath not [39] nor is any impediment, except it be by accident or intermixture of humour. That a religion which consisteth in rites and forms of adoration, and not in confessions and beliefs, is adverse to knowledge ; because men having liberty to inquire and discourse of Theology at pleasure, it cometh to pass that all inquisition of nature endeth and limiteth itself in such metaphysical or theological discourse ; whereas if men's wits be shut out of that part, it turneth them again to discover and so to seek reason of reason more deeply. And that such was the religion of the Heathen. That a religion that is jealous of the variety of learning,

[39] So MS.

discourse, opinions, and sects, (as misdoubting it may shake the foundations), or that cherisheth devotion upon simplicity and ignorance, as ascribing ordinary effects to the immediate working of God, is adverse to knowledge. That such is the religion of the Turk, and such hath been the abuse of Christian religion at some several times, and in some several factions. And of the singular advantage which the Christian religion hath towards the furtherance of true knowledge, in that it excludeth and interdicteth human reason, whether by interpretation or anticipation, from examining or discussing of the mysteries and principles of faith.

CAP. 26.

Of the impediments which have been in the nature of society and the policies of state. That there is no composition of estate or society, nor order or quality of persons, which have not some point of contrariety towards true knowledge. That monarchies incline wits to profit and pleasure, and commonwealths to glory and vanity. That universities incline wits to sophistry and affectation, cloisters to fables and unprofitable subtilty, study at large to variety; and that it is hard to say, whether mixture of contemplations with an active life, or retiring wholly to contemplations, do disable and hinder the mind more.

FILUM LABYRINTHI, SIVE FORMULA INQUISITIONIS

PREFACE.

THE following fragment was first printed in Stephens's second collection (1734), from a manuscript belonging to Lord Oxford, which is now in the British Museum (Harl. MSS. 6797. fo. 139). As far as it goes, it agrees so nearly with the *Cogitata et Visa* that either might be taken for a free translation of the other, with a few additions and omissions. But I think the English was written first; probably at the time when the idea first occurred to Bacon of drawing attention to his doctrine by exhibiting a specimen of the process and the result in one or two particular cases. The *Cogitata et Visa* professes to be merely a preface framed to prepare the way for an example of a legitimate philosophical investigation proceeding regularly by Tables. Such an example, or at least the plan and skeleton of it, will be found further on,[1] with the title *Filum Labyrinthi, sive Inquisitio legitima de Motu;* and the title prefixed to this fragment is most easily explained by supposing that a specimen of an *Inquisitio legitima* was meant to be included in it.

It is here printed from the original MS. which is a fair copy in the hand of one of Bacon's servants, carefully corrected in his own.

J. S.

[1 A Latin treatise, not given in this reprint.—ED.]

AD FILIOS [1].

PARS PRIMA.

1. Francis Bacon thought in this manner. The knowledge whereof the world is now possessed, especially that of nature, extendeth not to magnitude and certainty of works. The Physician pronounceth many diseases incurable, and faileth oft in the rest. The Alchemists wax old and die in hopes. The Magicians perform nothing that is permanent and profitable. The Mechanics take small light from natural philosophy, and do but spin on their own little threads. Chance sometimes discovereth inventions; but that worketh not in years, but ages. So he saw well, that the inventions known are very unperfect; and that new are not like to be brought to light but in great length of time; and that those which are, came not to light by philosophy.

2. He thought also this state of knowledge was the worse, because men strive (against themselves) to save the credit of ignorance, and to satisfy themselves in this poverty. For the Physician, besides his cauteles of practice, hath this general cautele of art, that he dischargeth the weakness of his art upon supposed impossibilities: neither can his art be condemned, when itself judgeth. That philosophy also, out of which the knowledge of physic, which now is in use, is hewed, receiveth certain positions and opinions, which (if they be well weighed) induce this persuasion, that no great works are to be expected from art, and the hand of man; as in particular that opinion, *that the heat of the sun and fire differ in kind;* and that other, *that Composition is the work of man, and Mixture is the work of nature*, and the like; all tending to the circumscription of man's power, and to artificial despair; killing in men, not only the comfort of [2] imagination but the industry of trial; only upon vain glory to have their art thought perfect, and that all is impossible that is not already found. The Alchemist dischargeth his art upon his own errors, either supposing a misunderstanding of the words of his authors, which maketh him listen after auricular traditions; or else a failing in the true proportions and scruples of practice, which maketh him renew infinitely his trials; and finding also that he lighteth upon some mean experiments and conclusions by the way, feedeth upon them, and magnifieth them to the most, and supplieth the rest in hopes. The Magician, when he findeth something (as he conceiveth) above nature effected, thinketh, when a breach is once made in nature, that it is all one to perform great things and small; not seeing that they are but subjects of a certain kind, wherein magic and superstition hath played in all times. The Mechanical person, if he can refine an invention, or put two or three observations or practices together in one, or couple things better with their use, or make the work in less or greater volume, taketh himself for an inventor. So he saw well, that men either persuade themselves of new inventions as of impossibilities; or else think they are already extant, but in secret and in few hands; or that they account of those little industries and additions, as of inventions: all which turneth to the averting of their minds from any just and constant labour to invent further in any quantity.

3. He thought also, when men did set before themselves the variety and perfection of works produced by mechanical arts, they are apt rather to admire the provisions of man, than to apprehend his wants; not considering, that the original inventions and conclusions of nature which are the life of all that variety, are not many nor deeply fetched; and that the rest is but the subtile and ruled

[1] This is written at the top of the page, in the left-hand corner, in Bacon's hand.

[2] *of* is omitted in the MS.

motion of the instrument and hand ; and that the shop therein is not unlike the library, which in such number of books containeth (for the far greater part) nothing but iterations, varied sometimes in form, but not new in substance. So he saw plainly, that opinion of store was a cause of want ; and that both works and doctrines appear many and are few.

4. He thought also, that knowledge is uttered to men, in a form as if every thing were finished ; for it is reduced into arts and methods, which in their divisions do seem to include all that may be. And how weakly soever the parts are filled, yet they carry the show and reason of a total ; and thereby the writings of some received authors go for the very art : whereas antiquity used to deliver the knowledge which the mind of man had gathered, in observations, aphorisms, or short and dispersed sentences, or small tractates of some parts that they had diligently meditated and laboured ; which did invite men, both to ponder that which was invented, and to add and supply further. But now sciences are delivered to be believed and accepted, and not to be examined and further discovered ; and the succession is between master and disciple, and not between inventor and continuer or advancer : and therefore sciences stand at a stay, and have done for many ages, and that which is positive is fixed, and that which is question is kept question, so as the columns of no further proceeding are pitched. And therefore he saw plainly, men had cut themselves off from further invention ; and that it is no marvel that that is not obtained, which hath not been attempted, but rather shut out and debarred.

5. He thought also, that knowledge is almost generally sought either for delight and satisfaction, or for gain and profession, or for credit and ornament, and that every one of these are as Atalanta's balls, which hinder the race of invention. For men are so far in these courses from seeking to increase the mass of knowledge, as of that mass which is they will take no more than will serve their turn : and if any one amongst so many seeketh knowledge for itself, yet he rather seeketh to know the variety of things, than to discern of the truth and causes of them ; and if his inquisition be yet more severe, yet it tendeth rather to judgment than to invention ; and rather to discover truth in controversy than new matter ; and if his heart be so large as he propoundeth to himself further discovery or invention, yet it is rather of new discourse and speculation of causes, than of effects and operations : and as for those that have so much in their mouths, action and use and practice and the referring of sciences thereunto, they mean it of application of that which is known, and not of a discovery of that which is unknown. So he saw plainly, that this mark, namely invention of further means to endow the condition and life of man with new powers or works, was almost never yet set up and resolved in man's intention and inquiry.

6. He thought also, that, amongst other knowledges, natural philosophy hath been the least followed and laboured. For since the Christian faith, the greatest number of wits have been employed, and the greatest helps and rewards have been converted upon divinity. And beforetime likewise, the greatest part of the studies of philosophers was consumed in moral philosophy, which was as the heathen divinity. And in both times a great part of the best wits betook themselves to law, pleadings, and causes of estate ; specially in the time of the greatness of the Romans, who by reason of their large empire needed the service of all their able men for civil business. And the time amongst the Grecians in which natural philosophy seemed most to flourish, was but a short space ; and that also rather abused in differing sects and conflicts of opinions, than profitably spent : since which time, natural philosophy was never any profession, nor never possessed any whole man, except perchance some monk in a cloister, or some gentleman in the country, and that very rarely ; but became a science of passage, to season a little young and unripe wits, and to serve for an introduction to other arts, specially physic and the practical mathematics. So as he saw plainly, that natural philosophy hath been intended by few persons, and in them hath occupied the least part of their time, and that in the weakest of their age and judgment.

7. He thought also, how great opposition and prejudice natural philosophy had received by superstition, and the immoderate and blind zeal of religion ; for

he found that some of the Grecians which first gave the reason of thunder, had been condemned of impiety ; and that the cosmographers which first discovered and described the roundness of the earth, and the consequence thereof touching the *Antipodes*, were not much otherwise censured by the ancient fathers of the Christian Church ; and that the case is now much worse, in regard of the boldness of the schoolmen and their dependances in the monasteries, who having made divinity into an art, have almost incorporated the contentious philosophy of Aristotle into the body of Christian religion. And generally he perceived in men of devout simplicity, this opinion, that the secrets of nature were the secrets of God and part of that glory whereinto the mind of man if it seek to press shall be oppressed ; and that the desire in men to attain to so great and hidden knowledge, hath a resemblance with that temptation which caused the original fall : and on the other side in men of a devout policy, he noted an inclination to have the people depend upon God the more, when they are less acquainted with second causes ; and to have no stirring in philosophy, lest it may lead to an innovation in divinity, or else should discover matter of further contradiction to divinity. But in this part resorting to the authority of the Scriptures, and holy examples, and to reason, he rested not satisfied alone, but much confirmed. For first he considered that the knowledge of nature, by the light whereof man discerned of every living creature, and imposed names according to their propriety, was not the occasion of the fall ; but the moral knowledge of good and evil, affected to the end to depend no more upon God's commandments, but for man to direct himself ; neither could he find in any Scripture, that the inquiry and science of man in any thing, under the mysteries of the Deity, is determined and restrained, but contrariwise allowed and provoked ; for concerning all other knowledge teh Scripture pronounceth, *That it is the glory of God to conceal, but it is the glory of man* (*or of the king*, for the king is but the excellency of man) *to invent ;* and again, *The spirit of man is as the lamp of God, wherewith he searcheth every secret ;* and again most effectually, *That God hath made all things beautiful and decent, according to the return of their seasons ; also that he hath set the world in man's heart, and yet man cannot find out the work which God worketh from the beginning to the end ;* shewing that the heart of man is a continent of that concave or capacity, wherein the content of the world (that is, all forms of the creatures and whatsoever is not God) may be placed or received ; and complaining that through the variety of things and vicissitudes of times (which are but impediments and not impuissances) man cannot accomplish his invention. In precedent also he set before his eyes, that in those few memorials before the flood, the Scripture honoureth the name of the inventors of music and works in metal ; that Moses had this addition of praise, that he was seen in all the learning of the Egyptians ; that Solomon [3], in his grant of wisdom from God, had contained as a branch thereof, that knowledge whereby he wrote a natural history of all verdor, from the cedar to the moss, and of all that breatheth ; that the book of Job, and many places of the prophets, have great aspersion of natural philosophy ; that the Church in the bosom and lap thereof, in the greatest injuries of times, ever preserved (as holy relics) the books of philosophy and all heathen learning ; and that when Gregory the bishop of Rome became adverse and unjust to the memory of heathen antiquity, it was censured for pusillanimity in him, and the honour thereof soon after restored, and his own memory almost persecuted by his successor Sabinian ; and lastly in our times and the ages of our fathers, when Luther and the divines of the Protestant Church on the one side, and the Jesuits on the other, have enterprised to reform, the one the doctrine, the other the discipline and manners of the Church of Rome, he saw well how both of them have awaked to their great honour and succour all human learning. And for reason, there cannot be a greater and more evident than this ; that all knowledge and specially that of natural philosophy tendeth highly to the magnifying of the glory of God in his power, providence, and benefits ; appearing and engraven in his works, which without this knowledge are beheld but as through a veil ; for if the heavens in the body of them do declare the glory of God to the eye, much more do they

[3] So spelt in MS

in the rule and decrees of them declare it to the understanding. And another reason not inferior to this is, that the same natural philosophy principally amongst all other human knowledge doth give an excellent defence against both extremes of religion, superstition and infidelity ; for both it freeth the mind from a number of weak fancies and imaginations, and it raiseth the mind to acknowledge that to God all things are possible : for to that purpose speaketh our Saviour in that first canon against heresies delivered upon the case of the resurrection, *You err, not knowing the Scriptures, nor the power of God ;* teaching that there are but two fountains of heresy, not knowing the will of God revealed in the Scriptures, and not knowing the power of God revealed or at least made most sensible in his creatures. So as he saw well, that natural philosophy was of excellent use to the exaltation of the Divine Majesty ; and that which is admirable, that being a remedy of superstition, it is nevertheless an help to faith. He saw likewise, that the former opinions to the prejudice thereof had no true ground ; but must spring either out of mere ignorance, or out of an excess of devotion, to have divinity all in all, whereas it should be only above all (both which states of mind may be best pardoned) ; or else out of worse causes, namely out of envy, which is proud weakness and deserveth to be despised ; or out of some mixture of imposture, to tell a lie for God's cause ; or out of an impious diffidence, as if men should fear to discover some things in nature which might subvert faith. But still he saw well, howsoever these opinions are in right reason reproved, yet they leave not to be most effectual hindrances to natural philosophy and invention.

8. He thought also, that there wanted not great contrariety to the further discovery of sciences, in regard of the orders and customs of universities, and also in regard of common opinion. For in universities and colleges men's studies are almost confined to certain authors, from which if any dissenteth or propoundeth matter of redargution, it is enough to make him thought a person turbulent ; whereas if it be well advised, there is a great difference to be made between matter contemplative and active. For in government change is suspected, though to the better ; but it is natural to arts to be in perpetual agitation and growth ; neither is the danger alike of new light, and of new motion or remove. And for vulgar and received opinions, nothing is more usual nor more usually complained of, than that it is imposed [4] for arrogancy and presumption for men to authorise themselves against antiquity and authors, towards whom envy is ceased, and reverence by time amortised ; it not being considered what Aristotle himself did (upon whom the philosophy that now is chiefly dependeth) ; who came with a professed contradiction to all the world, and did put all his opinions upon his own authority and argument, and never so much as nameth an author but to confute and reprove him ; and yet his success well fulfilled the observation of Him that said, *If a man come in his own name, him will you receive.* Men think likewise that if they should give themselves to the liberty of invention and travail of inquiry, that they shall light again upon some conceits and contemplations which have been formerly offered to the world, and have been put down by better, which have prevailed and brought them to oblivion ; not seeing that howsoever the property and breeding of knowledges is in great and excellent wits, yet the estimation and price of them is in the multitude, or in the inclinations of princes and great persons meanly learned. So as those knowledges are like to be received and honoured, which have their foundation in the subtility or finest trial of common sense, or such as fill the imagination ; and not such knowledge as is digged out of the hard mine of history and experience, and falleth out to be in some points as adverse to common sense or popular reason, as religion, or more. Which kind of knowledge, except it be delivered with strange advantages of eloquence and power, may be likely to appear and disclose a little to the world and straight to vanish and shut again. So that time seemeth to be of the nature of a river or flood, that bringeth down to us that which is light and blown up, and sinketh and drowneth that which is solid and grave. So he saw well, that both in the state of religion, and in the administration of learning, and in common opinion, there were many and continual stops and traverses to the course of invention.

[4] So MS. : a miscopy, I suspect, for *imputed*.

9. He thought also, that the invention of works and further possibility was prejudiced in a more special manner than that of speculative truth ; for besides the impediments common to both, it hath by itself been notably hurt and discredited by the vain promises and pretences of Alchemy, Magic, Astrology, and such other arts, which (as they now pass) hold much more of imagination and belief than of sense and demonstration. But to use the poet's language, men ought to have remembered that although Ixion of a cloud in the likeness of Juno begat Centaurs and Chimæras, yet Jupiter also of the true Juno begat Vulcan and Hebe. Neither is it just to deny credit to the greatness of the acts of Alexander, because the like or more strange have been feigned of an Amadis or an Arthur, or other fabulous worthies. But though this in true reason should be, and that men ought not to make a confusion of unbelief ; yet he saw well it could not otherwise be in event, but that experience of untruth had made access to truth more difficult, and that the ignominy of vanity had abated all greatness of mind.

10. He thought also, there was found in the mind of man an affection naturally bred, and fortified and furthered by discourse and doctrine, which did pervert the true proceeding towards active and operative knowledge. This was a false estimation, that it should be as a diminution to the mind of man to be much conversant in experiences and particulars subject to sense and bound in matter, and which are laborious to search, ignoble to meditate, harsh to deliver, illiberal to practise, infinite as is supposed in number, and no ways accommodate to the glory of arts. This opinion or state of mind received much credit and strength by the school of Plato, who thinking that particulars rather revived the notions or excited the faculties of the mind, than merely informed ; and having mingled his philosophy with superstition, which never favoureth the sense ; extolleth too much the understanding of man in the inward light thereof. And again Aristotle's school, which giveth the due to the sense in assertion, denieth it in practice much more than that of Plato. For we see the schoolmen, Aristotle's succession, which were utterly ignorant of history, rested only upon agitation of wit ; whereas Plato giveth good example of inquiry by induction and view of particulars ; though in such a wandering manner as is of no force or fruit. So that he saw well, that the supposition of the sufficiency of man's mind hath lost the means thereof [5].

[5] Here the MS. ends abruptly in the middle of the page. At the top is written in Bacon's hand " The English as much as was parfited ". The blank part of the last page seems to have formed the outside of a miscellaneous bundle, and bears the following docket, also in Bacon's hand, " Severall fragments of discourses ".

PREFACE TO THE NOVUM ORGANUM

BY ROBERT LESLIE ELLIS.[1]

THE *Novum Organum* was published in 1620. Certain prolegomena to the whole of the Instauratio were prefixed to it, namely a Procœmium beginning "Franciscus de Verulamio sic cogitavit," a dedication to King James, a general preface, and an account, entitled Distributio Operis, of the parts of which the Instauratio was to consist. Of these the *Novum Organum* is the second; the *De Augmentis*, which was not then published, occupying the place of the first. Accordingly in most editions of Bacon's works the prolegomena are prefixed, not to the *Novum Organum*, but to the *De Augmentis*; and this is doubtless their natural place. Nevertheless as Bacon's general design was not completed, it seems better to allow them to remain in their original position, especially as in the Procœmium Bacon explains why he publishes one portion of the Instauratio apart from the rest. "Decrevit," he there says, speaking of himself, "prima quæque quæ perficere licuit in publicum edere. Neque hæc festinatio ambitiosa fuit, sed sollicita, ut si quid illi humanitus accideret, exstaret tamen designatio quædam ac destinatio rei quam animo complexus est," etc.

After the Procœmium and the dedication we come to the Præfatio Generalis, in which Bacon speaks of the unprosperous state of knowledge and of the necessity of a new method; and then follows the Distributio Operis. The Instauratio is to be divided into six portions, of which the first is to contain a general survey of the present state of knowledge. In the second men are to be taught how to use their understanding aright in the investigation of Nature. In the third all the phenomena of the universe are to be stored up as in a treasure-house, as the materials on which the new method is to be employed. In the fourth examples are to be given of its operation and of the results to which it leads. The fifth is to contain what Bacon had accomplished in natural philosophy without the aid of his own method, but merely "ex eodem intellectûs usu quem alii in inquirendo et inveniendo adhibere consueverunt". It is therefore less

[1] Mr. Ellis's preface to the *Novum Organum* was written when he was travelling abroad and had not his books of reference about him. He was at work upon it the night he was taken ill at Mentone, and was not afterwards able either to finish or to revise it. I have added a page or two at the end, by which the analysis of the first book is completed. Of the second book it was not necessary to say anything; the subject of it being Bacon's *method*, which has been fully discussed in the General Preface. A few bibliographical inaccuracies of little consequence in themselves I have corrected, either in notes or by the insertion of words within brackets. These were merely oversights, hardly avoidable in the first draft of a work written in such circumstances. But there are also a few opinions expressed incidentally in which I cannot altogether concur, though they have evidently been adopted deliberately. With regard to these (Mr. Ellis not being in a condition to enter into a discussion of them) I had no course but to explain the grounds of my dissent, and leave every man to decide for himself upon the questions at issue. To avoid inconvenient interruptions however, I have thrown my arguments into an appendix, and contented myself in the foot notes with marking the particular expressions which I hold to be questionable.—*J. S.*

important than the rest, and Bacon declares that he will not bind himself to the conclusions it contains. Moreover its value will altogether cease when the sixth part can be completed, wherein will be set forth the new philosophy—the result of the application of the new method to all the phenomena of the universe. But to complete this, the last part of the Instauratio, Bacon does not hope : he speaks of it as a thing " et supra vires et ultra spes nostras collocata."

The greater part of the plan traced in the Distributio remained unfulfilled. Not to speak of the last division of the Instauratio, no part of Bacon's writings can properly be referred either to the fourth or fifth, except two prefaces which are found among the fragments published by Gruter.[2] To the fifth division however M. Bouillet [3] is disposed to refer several of Bacon's philosophical writings ; as, for instance, the tracts entitled *De Fluxu et Refluxu Maris*, and *Thema Cœli*. But though they correspond with the description which Bacon gives of the contents of the fifth part of the Instauratio, there is no reason to suppose that they would have been comprised in it. They were written a considerable time before the publication of the *Novum Organum ;* the *Thema Cœli* being clearly of the same date as the *Descriptio Globi intellectualis*, written in 1612 [4], and the *De Fluxu et Refluxu Maris* being probably written before Bacon had become acquainted with Galileo's theory of the tides. This theory was published in 1616 ; and it is reasonable to suppose that Bacon, who speaks of it in the *Novum Organum*, would have mentioned it in the *De Fluxu*, if the latter had not been written either before it was published, or but a short time afterwards [5]. These tracts, and the others which M. Bouillet mentions, are clearly occasional writings not belonging to the circuit of the Instauratio.

To the fourth part have been referred the *Historia Ventorum*, the *Historia Vitæ et Mortis*, etc. This however is contrary to Bacon's description of them in the dedication to Prince Charles prefixed to the *Historia Ventorum*. They are there spoken of as the " primitiæ Historiæ nostræ naturalis." Even the general title with which the *Historia Ventorum* and the titles of five other Historiæ were published, shows that they belong not to the fourth but to the third part of the Instauratio. It is as follows :—*Historia Naturalis ad condendam Philosophiam, sive Phænomena Universi, quæ est Instaurationis Magnæ pars tertia.* It is moreover manifest that as the fourth part was to contain applications to certain subjects of Bacon's method of induction, these treatises, in which the method is nowhere employed, cannot belong to it. M. Bouillet, though he justly dissents from Shaw's [6] arrangement, by whom they are referred to the fourth part, nevertheless commits an error of the same kind by introducing into this division of the Instauratio a fragment on Motion, published by Gruter with the title *Filum Labyrinthi, sive Inquisitio legitima de Motu*. This fragment, which is doubtless anterior to the *Novum Organum*, contains many thoughts and expressions which are found more perfectly developed either in the *Novum Organum* itself, or in the Distributio Operis. It is not to be supposed that Bacon, after thus expressing

[2] Francisci Baconi de Verulamio Scripta in naturali et universali Philosophia. Amst. 1653.—*J. S.*

[3] Œuvres Philosophiques de Bacon, publiées d'après les textes originaux, avec notice, sommaires et éclaircissemens, par M. N. Bouillet. Paris, 1834.—*J. S.*

[4] See the Preface to the *Descriptio Globi intellectualis.—J.S.*

[5] That the *De Fluxu* was written before the *Thema Cœli* is almost proved by the allusion to it in the following passage : " Verum hujusce rei demonstrationes et evidentias in anticipatione nostrâ de fluxu et refluxu maris plene tractavimus ". I say *almost* proved, because Bacon in writing a piece which was designed to come after another which was not yet written, would sometimes refer to that other as if it were already done. But it is not likely that he should have done so here ; for in any general scheme the *Thema Cœli* would have come before the *De Fluxu*. In a letter to Bacon, dated 14th April 1619, Tobie Matthew speaks of Galileo's having *answered* Bacon's discourse touching the flux and reflux of the sea : but he alludes apparently to a discourse of Galileo's on that subject which had never been printed.—*J. S.*

[6] The Philosophical Works of Francis Bacon, Baron of Verulam, etc. ; methodised and made English from the Originals, by Peter Shaw, M.D., London, 1733.—*J. S.*

himself in the Distributio—" Neque enim hoc siverit Deus ut phantasiæ nostræ somnium pro exemplari mundi edamus ; sed potius benigne faveat ut apocalypsim ac veram visionem vestigiorum et sigillorum Creatoris super creaturas scribamus "—would have repeated this remarkable sentence with scarcely any alteration in another part of the Instauratio [7] ; nor that he would have repeated in a somewhat less finished form the whole substance of the hundred and twenty-fifth aphorism of the first book of the *Novum Organum*. Yet we must admit this improbable supposition, if we decide on giving to the *Inquisitio legitima* the place which M. Bouillet has assigned to it. The truth is, that many of Bacon's shorter tracts preserved by Gruter and others are merely, so to speak, experimental fragments, of which the substance is embodied in his more finished writings.

Of the fourth and fifth parts of the Instauratio nothing, as I have already remarked, has been preserved except the prefaces, if indeed any other portion of them ever existed. But of the third, though it is altogether incomplete, we have nevertheless large fragments. Two years after the publication of the *Novum Organum* Bacon published the *Historia Naturalis ad condendam Philosophiam*, which has been already mentioned. In this however only the *Historia Ventorum* is contained in extenso ; and of the five other Historiæ of which Bacon speaks in the dedication, and of which he proposed to publish one every month, only two are now in existence, namely the *Historia Vitæ et Mortis*, published in 1623, and the *Historia Densi et Rari* which is contained in Rawley's *Opuscula varia posthuma*, published in 1658. Of the other three, namely the Historiæ *Gravis et Levis, Sympathiæ et Antipathiæ Rerum*, and *Sulphuris Mercurii et Salis*, we have only the prefaces, which were published in the same volume as the *Historia Ventorum*.

These Historiæ, and the *Sylva Sylvarum*, published soon after Bacon's death by Rawley, are the only works which we are entitled to refer to the third part of the Instauratio. With respect to the former we have the authority of Bacon's own title page and dedication ; and Rawley's dedication of the latter to King Charles shows that it is included under the general designation of *Historia Naturalis ad condendam Philosophiam* [8].

Other tracts however, of more or less importance, have been placed in the third part of the Instauratio, as for instance a fragment, published by Rawley in 1658, entitled *Historia et Inquisitio prima de Sono et Auditu et de Formâ Soni et latente processu Soni, sive Sylva Soni Auditus*. But the substance of this fragment occurs also in the *Sylva Sylvarum*, and therefore it cannot have been Bacon's intention to publish both as portions of his *Historia Naturalis*. It is probable that the *Historia de Sono et Auditu* was originally written as a portion of the general scheme of natural history [9] which was to form the third part of the In-

[7] I doubt whether this argument can be safely relied upon. Among the works which were certainly meant to stand as part of the Instauratio several remarkable passages occur twice and more than twice. But there are other grounds for concluding that the *Inquisitio de Motu* was written soon after the *Cogitata et Visa* (1607). In the *Commentarius solutus*, a kind of diary which will be printed among the Occasional Works, I find the following entry under the date July 26. 1608 :—" The finishing the 3 tables *De Motu, De Calore et Frigore, De Sono*." After which follow (July 27.) several pages of notes for an *Inquisitio legitima de Motu*. It would seen that this *Inquisitio* was designed originally to be the example in which the new method was to be set forth (see last section of *Cogitata et Visa*), but that the *Inquisitio de Calore et Frigore* was afterwards preferred ; probably as more manageable.—*J. S.*

[8] " The whole body of the *Natural History*, either designed or written by the late Lord Viscount St. Albans, was dedicated to Your Majesty in the book *De Ventis*, about four years past, when Your Majesty was prince, so as there needed no new dedication of this work, but only in all humbleness to let Your Majesty know that it is yours ".—*Dedication to the King of the Sylva Sylvarum.*

[9] It was probably the table *De Sono* referred to in the *Commentarius solutus*, July 26. 1608 (see note 7, above), and designed, like the tables *De Motu* and *De Calore et Frigore*, for an example of the new method.—*J. S.*

stauratio ; but it is certainly superseded by the *Sylva Sylvarum*, and is therefore not entitled to the position which has generally been assigned to it. So, too, the *Historiæ Naturalis ad condendam Philosophiam Præfatio destinata* [10], published by Gruter, is clearly irreconcilable with the plan laid down in the dedication to Prince Charles of the *Historia Naturalis*. For Bacon's intention when he wrote the preface which Gruter has published was plainly to commence his *Natural History* by treating of density and rarity, and not of the natural history of the winds. Subsequently he changed his plan ; and the first published portion of the third part of the Instauratio is, as we have seen, the *Historia Ventorum*. But this change of plan plainly shows that he had determined to cancel the fragment preserved by Gruter. Whenever what an author publishes or prepares for publication supersedes or contradicts unpublished and unfinished papers, these ought beyond all question to be set aside, and if published at all to be published apart from his other writings. Against some of the other fragments included in the third part of the Instauratio there is no such direct evidence as there is against those of which we have been speaking ; but it only gives rise to needless confusion to mix up with what we know it was Bacon's intention to publish as portions of his *Historia Naturalis*, loose fragments touching which we have no information whatever.

From what has been said it is manifest that what we possess of the third part of the Instauratio is merely a fragment—for the *Sylva Sylvarum*, a miscellaneous collection of observations gathered for the most part out of books, nowise completes Bacon's general design. In truth it is a design which cannot be completed, there being no limit to the number of the " Phænomena universi " which are potentially if not actually cognisable ; and it is to be observed that even if all the facts actually known at any instant could be collected and systematised (and even this is plainly impossible), yet still Bacon's aim would not be attained. For these facts alone would be insufficient as materials for the sixth part of the Instauratio, in which was to be contained all the knowledge of Nature man is capable of. Every day brings new facts to light not less entitled than those previously known to find a place in a complete description of the phenomena of the universe [11]. From many places in Bacon's writings it appears, as I have elsewhere remarked, that he had formed no adequate conception of the extent and variety of Nature. In a letter to R. P. Baranzan, who had apparently remarked by way of objection to Bacon's scheme of philosophy that a complete natural history would be a work of great extent and labour, Bacon observes that it would perhaps be sixfold as voluminous as that of Pliny. We have here therefore a sort of estimate of the limits which, in his judgment, the third part of the Instauratio would not exceed. What now exists of it is perhaps one twentieth in magnitude of this estimate.

Even the second part of the Instauratio, the *Novum Organum* itself, is incomplete. The second book concludes with the doctrine of prerogative instances.

[10] See Bouillet, vol. ii. p. 264. The preface in question is the introduction to the *Tabula Exporrectionis et Expansionis Materiæ*, a rudiment of the *Historia Densi et Rari*. It was published by Gruter, before the *Historia Densi et Rari* appeared, among the *Impetus Philosophici :* with the title, *Phænomena Universi ; sive Historia Naturalis ad condendam Philosophiam. Præfatio.* M. Bouillet gives the preface only.

[11] This would be true, I think, of all new facts which were not obviously reconcilable with laws previously known. But is it not conceivable that so complete a knowledge might be attained of the *laws* of Nature, that it could not be increased or affected by the discovery of any new *fact* in Nature ? If we had as complete a knowledge of other laws of Nature as we have of gravitation, for instance, new facts would still come to light, but with respect to the laws themselves they would all say the same thing, and therefore bring no new knowledge. Every new application of mechanical power contains some new *fact* more or less connected with gravitation ; yet unless a machine can be made which shall produce results not only new (i.e. such as had never been produced before) but inexplicable by the received theory of gravitation, are we not entitled to say that we know all that can be known about gravitation ?—*J. S.*

But in its twenty-first aphorism a number of subjects are mentioned of which this doctrine is the first, the last being the "Scala ascensoria et descensoria axiomatum." Neither this, nor any of these subjects after the first, except the last but one, is anywhere discussed in Bacon's writings; and our knowledge of his method is therefore incomplete. Even the penultimate division of the *Novum Organum* which was published along with the first two books, and which treats "de parascevis ad inquisitionem," has all the appearance of being a fragment, or at least of being less developed than Bacon had intended it to be.

The first part of the Instauratio is represented, not inadequately, by the *De Augmentis*, published about three years after the Distributio Operis and the *Novum Organum*. It is a translation with large additions of the *Advancement of Learning*, published in 1605; and if we regard the latter as a development of the ninth chapter of *Valerius Terminus*, which is an early fragment containing the germ of the whole of the Instauratio [12], the *De Augmentis* will appear to belong naturally to the great work of which it now forms the first and only complete portion. In the preface prefixed to it by Rawley it is said that Bacon, finding "the part relating to the Partitions of the Sciences already executed, though less solidly than the dignity of the argument demanded, . . . thought the best thing he could do would be to go over again what he had written, and to bring it to the state of a satisfactory and completed work. And in this way he considers that he fulfils the promise which he has given respecting the first part of the Instauration." [13]

From this general view of the different parts of the Instauratio, as described in the Distributio Operis, we proceed to consider more particularly the *Novum Organum*. Although it was left incomplete, it is nevertheless of all Bacon's works that upon which he bestowed the most pains. In the first book especially every word seems to have been carefully weighed; and it would be hard to omit or to change anything without injuring the meaning which Bacon intended to convey. His meaning is not always obvious, but it is always expressed with singular precision and felicity. His chaplain, Rawley, says that he had seen among his papers at least twelve yearly revisions of the *Novum Organum* [14]. Assuming, which there is no reason to doubt, that this statement may be relied upon, it would seem to follow that the composition of the *Novum Organum* commenced in 1608. And this agrees tolerably well with the circumstance that the *Cogitata et Visa* was sent to Bodley in 1607, as we learn from the date of Bodley's reply to it. If we suppose that the tract published with this title by Gruter is the same as that which was sent to Bodley, a passage near the end acquires a significance which has not I think been remarked. In the *Cogitata et Visa* Bacon speaks of the considerations whereby he had been led to perceive the necessity of a reform in philosophy, and goes on to say that the question as to how his new method might be most fitly given to the world had been much in his thoughts.

[12] I should rather say, the germ of all that part of the Instauratio which treated of the Interpretation of Nature. For I cannot find in the *Valerius Terminus* any traces of the *first* part, of which the *Advancement of Learning* was the germ. See Note A. at the end.—*J. S.*

[13] My own reasons for thinking that the *De Augmentis* did *not* form part of the original design, together with the circumstances which, as I suppose, determined Bacon to enlarge that design so as to take it in, will be explained in the preface to the *De Augmentis*.—*J. S.*

[14] "Ipse reperi in archivis Dominationis suæ autographa plus minus duodecim *Organi novi*, de anno in annum elaborati et ad incudem revocati; et singulis annis ulteriore limâ subinde politi et castigati." In the preceding sentence, he calls it "multorum annorum et laboris improbi proles".—*Auctoris Vita*, prefixed to the *Opuscula varia posthuma*, 1658. In the English life prefixed to the *Resuscitatio*, which was published the year before, he says, "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". I doubt whether we can fairly infer from these expressions that these twelve several copies were made in twelve several years; but substantially they bear out the inference drawn from them.—*J. S.*

" Atque diu," he proceeds, " et acriter rem cogitanti et perpendenti ante omnia visum est ei tabulas inveniendi, sive legitimæ inquisitionis formulas . . . in aliquibus subjectis proponi tanquam ad exemplum et operis descriptionem fere visibilem [15]. . . . Visum est autem, nimis abruptum esse ut à tabulis ipsis docendi initium sumatur. Itaque idonea quædam præfari oportuisse, quod et jam se fecisse arbitratur." It was Bacon's intention therefore when he wrote the *Cogitata et Visa*, and when apparently some years later [16] he communicated it to Bodley, to publish an example of the application of his method to some particular subject—an intention which remained unfulfilled until the publication of the *Novum Organum*. We may therefore conjecture that it was about this time that Bacon addressed himself to the great work of composing the *Novum Organum* [17]; and this agrees with what Rawley says of its having been twelve years in hand. This view also explains why the whole substance of the *Cogitata et Visa* is reproduced in the first book of the *Novum Organum*; for this tract was designed to be an introduction to a particular example of the new method of induction, such as that which we find near the beginning of the second book. Bacon's purpose in writing it was therefore the same as that which he had in view in the first book of the *Novum Organum*,—namely to procure a favourable reception for an example and illustration of his method. What has been said may be in some measure confirmed by comparing the *Cogitata et Visa* with an earlier tract,—namely the *Partis secundæ Delineatio et Argumentum*. When he wrote this tract Bacon did not propose to set forth his method merely by means of an example; on the contrary, the three ministrations to the sense, to the memory, and to the reason, of which the last is the new method of induction, were to be set forth in order and didactically. Whereas in the *Novum Organum* Bacon remarks, " incipiendum est à fine " (that is, the method of induction must be set forth before the method of collecting facts and that of arranging them so as best to assist the memory); and having said this, he goes on at once to his example,—namely, the investigation of the Form of heat. Thus it appears that after Bacon had not only decided on writing a great work on the reform of philosophy, but had also determined on dividing it into parts of which the second was to contain the exposition of his new method, he in some measure changed his plan, and resolved to set forth the essential and operative part of his system chiefly by means of an example. This change of plan appears to be marked by the *Cogitata et Visa*,—a circumstance which makes this tract one of the most interesting of the precursors of the *Novum Organum*.

[15] In the *Commentarius solutus*, under date July 26. 1608, I find the following memorandum :—" Seeing and trying whether the B. of Canterb. may not be affected in it, being single and glorious, and believing the sense ".

" Not desiring to draw in the Bp. Awnd. [Bishop Andrews, probably] being single, rich, sickly, and professor to some experiments : *this after the table of motion or some other in part set in forwardness*."

Some other memoranda in the same place relate to the gaining of *physicians*, and learning from them experiments of surgery and physic; which explains the epithet " sickly " in the above extract.—*J. S.*

[16] Bodley's answer is dated Feb. 19. 1607; i.e. 1607–8; in which he says, " I must tell you, to be plain, that you have very much wronged yourself and the world, to smother such a treasure so long in your coffer ". But I do not think we can infer from this that the *Cogitata et Visa* had been written " some years " before. Bodley may only allude to his having kept such thoughts so long to himself.—*J. S.*

[17] In the *Commentarius solutus*, under date July 26. 1608, I find the following memorandum :—" The finishing the Aphorisms, *Clavis interpretationis*, and then setting forth the book," and in the same page, a little after, " Imparting my *Cogitata et Visa*, with choice, ut videbitur ". The aphorisms here spoken of may have been the " Aphorismi et Consilia de auxiliis mentis et accensione luminis naturalis "; a fragment containing the substance of the first, second, and third aphorisms of the first book of the *Novum Organum*, and the first, third, and sixteenth of the second. *Clavis interpretationis* was probably the name which was afterwards exchanged for *Novum Organum*. —*J. S.*

That the *Partis secundæ Delineatio* is earlier than the *Cogitata et Visa* appears plainly from several considerations which M. Bouillet, who expresses a contrary opinion, seems to have overlooked. In the first place, whole sentences and even paragraphs of the *Cogitata et Visa* are reproduced with scarcely any alteration in the *Novum Organum ;* whereas this is by no means the case with any passage of the *Partis secundæ Delineatio.* But as it may be said that this difference arises from the different character of the two tracts, of which the one is simply a summary of a larger work, whereas the more developed style of the other resembles that of the *Novum Organum,* it may be well to compare them somewhat in detail.

In speaking of the prospects which the reform of philosophy was to open to mankind, Bacon thus expresses himself in the *Novum Organum :*—" Quinetiam prudentia civilis ad consilium vocanda est et adhibenda, quæ ex præscripto diffidit, et de rebus humanis in deterius conjicit". The corresponding sentence in the *Cogitata et Visa* is, " Consentaneum enim esse, prudentiam civilem in hâc parte adhibere, quæ ex præscripto diffidit et de humanis in deterius conjicit". Again, in the *Partis secundæ Delineatio* the same idea is thus expressed, " Si quis sobrius (ut sibi videri possit,) et civilis prudentiæ diffidentiam ad hæc transferens, existimet hæc quæ dicimus votis similia videri," etc. Here the somewhat obscure phrase " civilis prudentiæ diffidentiam " is clearly the germ of that by which it is replaced in the other two passages, namely, " prudentia civilis quæ ex præscripto diffidit." Again, in the *Partis secundæ Delineatio* Bacon affirms that ordinary induction " puerile quiddam est et precario concludit, periculo ab instantiâ contradictoriâ exposita " : in the *Cogitata et Visa,* that the logicians have devised a form of induction " admodum simplicem et plane puerilem, quæ per enumerationem tantum procedat, atque propterea precario non necessario concludat". The clause " quæ per enumerationem tantum procedat", which adds greatly to the distinctness of the whole sentence, is retained in the Distributio Operis, in which it is said that the induction of the logicians, " quæ procedit per enumerationem simplicem, puerile quiddam est, precario concludit, et periculo ab instantiâ contradictoriâ exponitur". To take another case : in the *Partis secundæ Delineatio,* Bacon, speaking of those who might object to his frequent mention of practical results as a thing unworthy of the dignity of philosophy, affirms that they hinder the accomplishment of their own wishes. " Quin etiam illis, quibus in contemplationis amorem effusis frequens apud nos operum mentio asperum quiddam atque ingratum et mechanicum sonat, monstrabimus quantum illi desideriis suis propriis adversentur, quum puritas contemplationum atque substructio et inventio operum prorsus eisdem rebus nitantur, ac simul perficiantur." In the *Cogitata et Visa,* this sentence recurs in a modified and much neater form :—" Si quis autem sit cui in contemplationis amorem et venerationem effuso ista operum frequens et cum tanto honore mentio quiddam asperum et ingratum sonet, is pro certo sciat se propriis desideriis adversari ; etenim in naturâ, opera non tantum vitæ beneficia, sed et veritatis pignora esse". On comparing these two sentences, it is difficult to believe that Bacon would have omitted the antithesis with which the latter ends in order to introduce the somewhat cumbrous expressions which correspond to it in the former, especially as we find this antithesis reproduced, though with another context, in the *Novum Organum.* " Opera ipsa," it is there said, " pluris facienda sunt quatenus sunt veritatis pignora quam propter vitæ commoda" [18].

These instances will probably be thought sufficient to justify us in concluding that the *Partis secundæ Delineatio,* in which no mention is made of the plan of setting forth the new method of induction by means of an example, is of earlier date than the *Cogitata et Visa,* in which this plan, actually employed in the *Novum Organum,* is spoken of as that which Bacon had decided on adopting. This

[18] Nov. Org. i. 124. It is well to mention that some of the expressions in this aphorism which do not occur in the *Cogitata et Visa* will be found in the *Partis secundæ Delineatio.* But it will be observed that I am only comparing passages which occur in all three works. Of the greater general resemblance of the *Cogitata et Visa* to the *Novum Organum* there can be no question.

question of priority is not without interest ; for if the *Partis secundæ Delineatio* is anterior to the *Cogitata et Visa*, the general plan of the Instauratio must have been formed a considerable time before 1607, about which time Bacon probably commenced the composition of the *Novum Organum*. If we could determine the date of *Valerius Terminus*, we should be able to assign limits within which the formation of this plan, so far as relates to the division of the work into six portions, may be supposed to lie. For the first book of *Valerius Terminus* was to include all that was to precede the exposition of the new method of induction, which was to be the subject of the second ; that is, it was to comprehend, along with the first part of the Instauratio [19], the general reflexions and precepts which form the subject of the first book of the *Novum Organum*. Nor does it appear that *Valerius Terminus* was to contain anything corresponding to the last four parts of the Instauratio [20] ; it was a work, as its title [21] shows, on the Interpretation of Nature ; that is, it was to be a statement of Bacon's method, without professing either to give the collection of facts to which the method was to be applied, or the results thereby obtained. Unfortunately, there appears to be no evidence tending to enable us to assign the time at which (or not long after it) *Valerius Terminus* was written. That it is earlier than the *Advancement of Learning* seems to follow from the circumstance that Bacon, when he wrote it, designed to include in a single chapter the general survey of human knowledge which in the *Advancement* is developed into two books [22]. Bacon has on all occasions condemned epitomes, and it is therefore altogether improbable that after writing the *Advancement of Learning* he would have endeavoured to compress its contents, or even those of the second book, within the limits proposed in *Valerius Terminus*. On the other hand, we may suppose that before writing the *Advancement* he had not seen how much he had to say on the subject to which it relates. We may conclude therefore, on these and other grounds, that *Valerius Terminus* was written some time before 1605 ; how much before cannot be known ; but as by comparing the *Partis secundæ Delineatio* and the *Cogitata et Visa* with the *Novum Organum* we have seen reason to conclude that the general plan of the Instauratio was formed before Bacon had decided on propounding his method by means of an example, so by comparing the first-named of these three works with *Valerius Terminus*, we perceive that the idea of the work on the Interpretation of Nature, that is, on the new method of induction, was anterior in Bacon's mind to that of the Instauratio.

And this conclusion is confirmed by all we know of Bacon's early writings. In the earliest of all (if we assume that the *Temporis Partus Masculus*, published by Gruter [23], is the same as the *Temporis Partus Maximus* mentioned by Bacon in his letter to Fulgenzio), the most prominent notion is that true science consists in the interpretation of Nature—a phrase by which Bacon always designates a just method of induction. But nothing is said either there or in any early fragment whereby we are led to suppose that Bacon then thought of producing a great work like the Instauratio. On the contrary, in the *De Interpretatione Naturæ Proœmium* he proposes to communicate his peculiar method and the results to which it was to lead, only to chosen followers ; giving to the world merely an exoteric doctrine, namely the general views of science which afterwards formed the substance of the *Cogitata et Visa* and ultimately of the first book of the *Novum Organum* [24].

From what has been said it follows that we should form an inadequate conception of the *Novum Organum* if we were to regard it merely as a portion of the Instauratio. For it contains the central ideas of Bacon's system, of which the

[19] Query. See Note A. at the end, § 1.—*J. S.*

[20] Query. See Note A. at the end, § 2.—*J. S.*

[21] "Valerius Terminus of the Interpretation of Nature ; with the Annotations of Hermes Stella. A few fragments of the first book, viz.," etc.

[22] Query. See Note A. at the end, § 1.—*J. S.*

[23] Say rather, "the several tracts collected by M. Bouillet under the title *Temporis Partus Masculus*". See Note A. at the end, § 3.—*J. S.*

[24] See Note A. at the end, § 4.—*J. S.*

whole of the Instauratio is only the developement. In his early youth Bacon formed the notion of a new method of induction, and from that time forth this notion determined the character of all his speculations. Later in life he laid the plan of a great work, within the limits of which the materials to which his method was to be applied and the results thereby to be obtained might be stored up, together with a statement of the method itself. But of this great plan the interpretation of Nature was, so to speak, the soul,—the formative and vivifying principle; not only because Bacon conceived that the new method only could lead to the attainment of the great ends which he had in view, but also because it was the possession of this method which had suggested to him the hopes which he entertained [25]. There seems some reason to believe that his confidence in his peculiar method of induction did not increase as he grew older; that is to say, he admits in the *Novum Organum* that the interpretation of Nature is not so much an artificial process as the way in which the mind would naturally work if the obstacles whereby it is hindered in the pursuit of truth were once set aside [26]. So that his precepts are, he says, not of absolute necessity: "necessitatem ei (arti interpretationis scilicet) ac si absque eâ nil agi possit, aut etiam perfectionem non attribuimus,"—an admission not altogether in the spirit of the earlier writings in which the art of interpretation is spoken of as a secret of too much value to be lightly revealed [27].

If it be asked why Bacon determined on propounding his method by means of an example, the answer is to be sought for in the last paragraphs of the *Cogitata et Visa*. He seems to have thought that it would thus obtain a favourable reception, because its value would be to a certain extent made manifest by the example itself. Likewise he hoped in this way to avoid all occasion of dispute and controversy, and thought that an example would be enough to make his meaning understood by all who were capable of understanding it. "Fere enim se in eâ esse opinione, nempe (quod quispiam dixit) prudentibus hæc satis fore, imprudentibus autem ne plura quidem."

His expectations have not been fulfilled, for very few of those who have spoken of Bacon have understood his method, or have even attempted to explain its distinguishing characteristics, namely the certainty of its results, and its power of reducing all men to one common level.

Another reason for the course which he followed may not improbably have been that he was more or less conscious that he could not demonstrate the validity, or at least the practicability, of that which he proposed. The fundamental principle in virtue of which alone a method of exclusions can necessarily lead to a positive result, namely that the subject matter to which it is applied consists of a finite number of elements, each of which the mind can recognise and distinguish from the rest, cannot, it is manifest, be for any particular case demonstrated à priori. Bacon's method in effect assumes that substances can always

[25] I quite agree in this, but not quite on the same grounds. In Note A. at the end of this preface, the reader will find a statement, too long for a foot-note, of such points in the foregoing argument as I consider disputable. It was the more necessary to point them out, because the arrangement of the pieces in this edition, for which I am responsible, will otherwise create a difficulty; being in some respects inconsistent with the opinions here expressed.—*J. S.*

[26] Nov. Org. i. 130. "Est enim Interpretatio verum et naturale opus mentis, demptis iis quæ obstant". But compare the following passage in *Valerius Terminus*, c. 22: "that it is true that interpretation is the very natural and direct intention, action, and progression of the understanding, delivered from impediments. And that all anticipation is but a reflexion or declination by accident". So that if we may infer from the passage in the *Novum Organum* that his confidence had abated, we must suppose that when he wrote the *Valerius Terminus* it had not risen to its height. But for my own part I doubt whether his opinion on this point ever changed.—*J. S.*

[27] Not, I think, as a secret of too much value to be revealed, but as an argument too abstruse to be made popular. See Note B. at the end, where I have endeavoured to bring together all the evidence upon which the presumption in the text is founded, and to show that it proves either too much or too little.—*J. S.*

be resolved into an aggregation of a certain number of abstract qualities, and that their essence is adequately represented by the result of this analysis. Now this assumption or postulate cannot be made the subject of a direct demonstration, and probably Bacon came gradually to perceive more or less the difficulties which it involves. But these difficulties are less obvious in special cases than when the question is considered generally, and on this account Bacon may have decided to give instead of a demonstration of his method an example of its use. He admits at the close of the example that the operation of the method is imperfect, saying that at first it could not but be so, and implying that its defects would be removed when the process of induction had been applied to rectify our notions of simple natures. He thus seems to be aware of the inherent defect of his method, namely that it gives no assistance in the formation of conceptions, and at the same time to hope that this would be corrected by some modification of the inductive process. But of what nature this modification is to be he has nowhere stated ; and it is to be remarked that in his earliest writings the difficulty here recognised is not even mentioned. In *Valerius Terminus* nothing is said of the necessity of forming correct notions of simple natures,—the method of exclusions then doubtless appearing to contain all that is necessary for the investigation of Nature.

Bacon may also have been influenced by other considerations. We have seen that he was at first unwilling that his peculiar method should become generally known. In the *De Interpretatione Naturæ Proœmium* he speaks of its being a thing not to be published, but to be communicated orally to certain persons [28]. In *Valerius Terminus* his doctrine was to be veiled in an abrupt and obscure style[29], such as, to use his own expression, would choose its reader,—that is, would remain unread except by worthy recipients of its hidden meaning. This affected obscurity appears also in the *Temporis Partus Masculus*. In this unwillingness openly to reveal his method Bacon coincided with the common feeling of his own and earlier times. In the middle ages no new discovery was freely published. All the secrets, real or pretended, of the alchemists were concealed in obscure and enigmatic language ; and to mention a well-known instance, the anagram in which Roger Bacon is supposed to have recorded his knowledge of the art of making gunpowder is so obscure, that its meaning is even now more or less doubtful. In Bacon's own time one of the most remarkable discoveries of Galileo—that of the phases of Venus—was similarly hidden in an anagram, though the veil in this case was more easily seen through. This disposition to conceal scientific discoveries and methods is connected with the views which in the middle ages were formed of the nature of science. To know that which had previously been unknown was then regarded as the result not so much of greater industry or acuteness as of some fortunate accident, or of access to some hidden source of information : it was like finding a concealed treasure, of which the value would be decreased if others were allowed to share in it. Moreover the love of the marvellous inclined men to believe in the existence of wonderful secrets handed down by tradition from former ages, and any new discovery acquired something of the same mysterious interest by being kept back from the knowledge of the vulgar. Other causes, which need not here be detailed, increased this kind of reserve ; such as the dread of the imputation of unlawful knowledge, the facility which it gave to deception and imposture, and the like.

The manner in which Bacon proposed at one time to perpetuate the knowledge of his method is also in accordance with the spirit of the middle ages. In the writings of the alchemists we meet continually with stories of secrets transmitted by their possessor to one or more disciples. Thus Artefius records the conversation wherein his master, Boemund, transmitted to him the first prin-

[28] See Note B. at the end, extract 4th, and the concluding remarks in which I have explained my own view of the kind of reserve which Bacon at this time meditated. —*J. S.*

[29] See the same note, extract 1st. I cannot think it was by " abruptness and obscurity " that he proposed to effect the desired separation of readers either in *Valerius Terminus* or in the *Temporis Partus Masculus*.—*J. S.*

ciples of all knowledge ; and it is remarkable that in this and similar cases the disciple is called " mi fili " by his instructor—a circumstance which shows from what source Bacon derived the phrase " ad filios," which appears in the titles of several of his early pieces. Even in the *De Augmentis* the highest and most effectual form of scientific teaching is called the " methodus ad filios " [30].

When he wrote the *Cogitata et Visa*, Bacon seems to have perceived [31] how much of vanity and imposture had always been mixed up with this affectation of concealment and reserve. " Reperit autem", he there says, " homines in rerum scientiâ quam sibi videntur adepti, interdum proferendâ interdum occultandâ, famæ et ostentationi servire ; quin et eos potissimum qui minus solida proponunt, solere ea quæ afferunt obscurâ et ambiguâ luce venditare, ut facilius vanitati suæ velificare possint". The matter which he has in hand, he goes on to say, is one which it were nowise fitting to defile by affectation or vain glory ; but yet it cannot be forgotten that inveterate errors, like the delusions of madmen, are to be overcome by art and subtlety, and are always exasperated by violence and opposition. The result of this kind of dilemma is that the method is to be propounded in an example,—a decision in which it is probable that he was still more or less influenced by the example of those whom he here condemns.

Thus much of the connection between the plan of the *Novum Organum* and that which Bacon laid down in the *Cogitata et Visa*. That there is no didactic exposition of his method in the whole of his writings has not been sufficiently remarked by those who have spoken of his philosophy ; probably because what he himself regarded as a sort of exoteric doctrine, namely the views of science contained in the first book of the *Novum Organum*, have received much more attention than the method itself, which is nevertheless the cardinal point of his whole system. Bacon is to be regarded, not as the founder of a new philosophy, but as the discoverer of a new method ; at least we must remember that this was his own view of himself and of his writings.

I proceed to give some account of the structure of the *Novum Organum* and of the parts into which it may be most conveniently divided.

[30] Lib. vi. c. 2. I cannot think however that the merit of this method had anything to do with *secresy*. For the distinctive object of it is stated to be the " continuatio et ulterior progressus " of knowledge ; and its distinctive characteristic, the being " solito *apertior* ". Its aim was to transfer knowledge into the mind of the disciple in the same form in which it grew in the teacher's mind, like a plant with its roots on, that it might continue to grow. Its other name is " traditio lampadis ", alluding to the Greek torch-race ; which was run, as I understand it, not between individuals, but between what we call *sides*. Each side had a lighted torch they were so arranged that each bearer, as he began to slacken, handed it to another who was fresh ; and the side whose torch first reached the goal, still a-light, was the winner. The term " filii ", therefore, alludes, I think, to the successive generations, not who should inherit the secret, but who should carry on the work. Compare the remarks in the *Sapientia Veterum* (Fab. xxvi. near the end), upon the torch-races in honour of Prometheus. " Atque continet in se monitum, idque prudentissimum, ut perfectio scientiarum a successione, non ab unius alicujus pernicitate aut facultate, expectetur. . . . . Atque optandum esset ut isti ludi in honorem Promethei, sive humanæ naturæ, instaurarentur, atque res *certamen, et æmulationem, et bonam fortunam* reciperet ; neque ex unius cujuspiam face tremulâ atque agitatâ penderet." To me, I must confess, the explanation above given of Bacon's motives for desiring a select audience seems irreconcilable both with the objects which he certainly had in view and with the spirit in which he appears to have pursued them. " Fit audience, though few," he no doubt desired ; and I can easily believe that he wished not only to find the fit, but also to exclude the unfit. But the question is, whether his motive in so selecting and so limiting his audience was unwillingness to part with his treasure, or solicitude for the furtherance of his work. To decide this question I have brought together all the passages in which he speaks of the " singling and adopting " of the " fit and legitimate reader ". But the collection, with the remarks which it suggests, being too long for a foot-note, I have placed them at the end of this preface. See Note B.—*J. S.*

[31] See Note B., extract 7th. But observe that in the 1st, 3rd, and 4th, he shows himself quite as sensible of the vanity and imposture which such secrecy had been made to subserve.—*J. S.*

After the preface, in which Bacon professes that it is not his intention to destroy the received philosophy, but rather that from henceforth there should be two co-existing and allied systems,—the one sufficient for the ordinary purposes of life, and such as would satisfy those who are content with probable opinions and commonly received notions ; the other for the sons of science, who desire to attain to certainty and to an insight into the hidden things of Nature,—we come to the *Novum Organum* itself ; which commences with some weighty sentences concerning the relation of Man to Nature. The first aphorism, perhaps the most often quoted sentence in the *Novum Organum*, occurs twice in the fragments published by Gruter ; namely in the *Aphorismi et Consilia de Auxiliis Mentis*, and again in a less perfect form in the *De Interpretatione Naturæ Sententiæ* XII., both which fragments are included [by M. Bouillet][32] under the title *Temporis Partus Masculus*, though they are clearly of different dates. The wording of the aphorism in the former is almost precisely the same as in the *Novum Organum*. In all three places man is styled "naturæ minister et interpres". He is naturæ interpres, because in every object which is presented to him there are two things to be considered, or rather two aspects of the same thing,—one the phenomenon which Nature presents to the senses—the other the inward mechanism and action, of which the phenomenon in question is not only the result but also the outward sign. To pass therefore from the phenomenon to its hidden cause is to interpret the signs which enable us to become acquainted with the operations of Nature. Again, he is the minister naturæ, because in all his works he can only arrange the things with which he deals in the order and form which Nature requires. All the rest comes from her only ; the conditions she requires having been fulfilled, she produces new phenomenon according to the laws of her own action. Thus the two words *minister* and *interpres* refer respectively to works and contemplation—to power and knowledge—the substance of Bacon's theory of both being compressed into a single phrase. The third and fourth aphorisms are developments of the first ; the second relating not to the theory of knowledge, but to the necessity of providing helps for the understanding.

Then follow (5–10) reflections on the sterility of the existing sciences, and (11–17) remarks on the inutility of logic. In (14) Bacon asserts that everything must depend on a just method of induction. From (18) to (37) he contrasts the only two ways in which knowledge can be sought for ; namely anticipations of Nature and the interpretation of Nature. In the former method men pass at once from particulars to the highest generalities, and thence deduce all intermediate propositions ; in the latter they rise by gradual induction and successively, from particulars to axioms of the lowest generality, then to intermediate axioms, and so ultimately to the highest. And this is the true way, but as yet untried.

Then from (38) to (68) Bacon developes the doctrine of idols. It is to be remarked that he uses the word idolon in antithesis to idea, the first place where it occurs being the twenty-third aphorism. "Non leve quiddam interest", it is there said, "inter humanæ mentis idola et divinæ mentis ideas". He nowhere refers to the common meaning of the word, namely the image of a false god. Idols are with him "placita quædam inania", or more generally, the false notions which have taken possession of men's minds. The doctrine of idols stands [he says] in the same relation to the interpretation of Nature, as the doctrine of fallacies to ordinary logic.

Of idols Bacon enumerates four kinds,—the idols of the tribe, of the cave, of the market-place, and of the theatre ; and it has been supposed that this classification is borrowed from Roger Bacon, who in the beginning of the *Opus Majus* speaks of four hindrances whereby men are kept back from the attainment of true knowledge. But this supposition is for several reasons improbable. The *Opus Majus* was not printed until the eighteenth century, and it is unlikely that Francis Bacon would have taken the trouble of reading it, or any part of it, in manuscript[33]. In the first place there is no evidence in any part of his works of this

[32] Not so included by *Gruter*. See note A. at the end, § 3.—*J. S.*

[33] I can hardly think that he would have omitted to look into a work like the *Opus Majus*, if he had had the opportunity. But it is very probable that no copy of it was

kind of research, and in the second he had no high opinion of his namesake, of whom he has spoken with far less respect than he deserves. The only work of Roger Bacon's which there is any good reason for believing that he was acquainted with is a tract on the art of prolonging life, which was published at Paris in 1542, and of which an English translation appeared in 1617. The general resemblance between the spirit in which the two Bacons speak of science and of its improvement is, notwithstanding what has sometimes been said, but slight. Both no doubt complain that sufficient attention has not been paid to observation and experiment, but that is all; and these complaints may be found in the writings of many other men, especially in the time of Francis Bacon. Nothing is more clear than that the essential doctrines of his philosophy—among which that of idols is to be reckoned—are, so far as he was aware, altogether his own. There is moreover but little analogy between his idols and his namesake's hindrances to knowledge. The principle of classification is altogether different, and the notion of a real connection between the two was probably suggested simply by there being the same number of idols as of hindrances[34]. It is therefore well to remark that in the early form of the doctrine of idols there were only three. In the *Partis secundæ Delineatio* the idols wherewith the mind is beset are said to be of three kinds: they either are inherent and innate or adscititious; and if the latter, arise either from received opinions in philosophy or from wrong principles of demonstration. This classification occurs also in *Valerius Terminus*[35].

The first of these three classes corresponds to the first and second of those spoken of in the *Novum Organum*. The idols of the tribe are those which belong, as Aristotle might have said, to the human mind as it is human,—the erroneous tendencies common more or less to all mankind. The idols of the cave arise from each man's mental constitution: the metaphor being suggested by a passage in the [opening of the seventh book of Plato's *Republic*[36].] Both classes of extraneous idols mentioned in the *Partis secundæ Delineatio* are included in the idola theatri, and the idola fori correspond to nothing in the earlier classification[37]. They also are extraneous idols, but result neither from received opinions nor erroneous forms of demonstration, but from the influence which words of necessity exert. They are called idols of the market-place because they are caused by the daily intercourse of common life. "Verba," remarks Bacon, "ex captu vulgi imponuntur."

It is only when we compare the later with the earlier form of the doctrine of idols that we perceive the principle of classification which Bacon was guided by, namely the division of idols according as they come from the mind itself or from

procurable; possible that he did not even know of its existence. The manner in which he speaks of Roger Bacon in the *Temporis Partus Masculus*, as belonging to the "utile genus" of experimentalists, "qui de theoriis non admodum soliciti *mechanicâ quâdam subtilitate rerum inventarum extensiones prehendunt*", seems rather to imply that he knew of him at that time chiefly by his reputation for mechanical inventions.—*J. S.*

[34] That the two may be the more conveniently compared, I have quoted Roger Bacon's exposition of his "offendicula", in a note upon the 39th aphorism, in which the names of the four "Idols" first occur. How slight the resemblance is between the two may be ascertained by a very simple test. If you are already acquainted with Francis Bacon's classification, try to assign each of the "offendicula" to its proper class. If not, try by the help of Roger's classification to find out Francis's.—*J. S.*

[35] Not in *Valerius Terminus*. It occurs in the *Distributio Operis*, and may be traced though less distinctly in the *Advancement* and the *De Augmentis*. See Note C. at the end.—*J. S.*

[36] Mr. Ellis had written "in the of Aristotle". But the words of the *De Augmentis* (v. 4)., "de specu *Platonis*", prove that it was the passage in Plato which suggested the metaphor.—*J. S.*

[37] i.e. in the classification adopted in the *Partis secundæ Delineatio*; for they correspond exactly with the third kind of fallacies or false appearances mentioned in the *Advancement*, and with the idols of the palace in *Valerius Terminus*. And I think they were meant to be included among the "Inhærentia et Innata" of the *Delineatio*. See Note C.—*J. S.*

without [38]. In the *Novum Organum* two belong to the former class and two to the latter, so that the members of the classification are better balanced [39] than in the previous arrangement: in both perhaps we perceive a trace of the dichotomizing principle of Ramus, one of the seeming novelties which he succeeded in making popular [40].

After enumerating the four kinds of idols, Bacon gives instances of each (45–67); and speaking in (62) of idols of the theatre, introduces a triple classification of false philosophies, to which he seems to have attached much importance, as we find it referred to in many parts of his writings. False philosophy is sophistical, empirical, or superstitious; sophistical, when it consists of dialectic subtleties built upon no better foundation than common notions and every-day observation; empirical, when it is educed out of a few experiments, however accurately examined; and superstitious, when theological traditions are made its basis. In the *Cogitata et Visa* he compares the rational philosophers (that is, those whose system is sophistical,—the name implying that they trust too much to reason and despise observation) to spiders whose webs are spun out of their own bodies, and the empirics to the ant which simply lays up its store and uses it. Whereas the true way is that of the bee, which gathers its materials from the flowers of the field and of the garden, and then, ex propriâ facultate, elaborates and transforms them [41]. The third kind of false philosophy is not here mentioned. In the *Novum Organum* Bacon perhaps intended particularly to refer to the Mosaical philosophy of Fludd, who is one of the most learned of the Cabalistic writers [42].

In (69) Bacon speaks of faulty demonstrations as the defences and bulwarks of idols, and divides the common process for the establishment of axioms and conclusions into four parts, each of which is defective. He here describes in general terms the new method of induction. In the next aphorism, which concludes this part of his object, he condemns the way in which experimental researches have commonly been carried on.

The doctrine of idols seems, when the *Novum Organum* was published, to have been esteemed one of its most important portions. Mersenne at least, the earliest critic on Bacon's writings, his *Certitude des Sciences* having been published in 1625 [43], speaks of the four idols, or rather of Bacon's remarks upon them, as the four buttresses of his philosophy. In Bacon's own opinion this doctrine was of much importance. Thus in the *De Interpretatione Naturæ Sententiæ Duodecim* he says, in the abrupt style of his earlier philosophical writings, "Qui primum et ante alia omnia animi motus humani penitus non explorarit, ibique scientiæ meatus et errorum sedes accuratissime descriptas non habuerit, is omnia

[38] Rather, I think, as they are separable or inseparable from our nature and condition in life. See Note C.—*J. S.*

[39] Compare the Distributio Operis, where the classification is retained, with the *Novum Organum*, where it is not alluded to, and I think it will be seen that Bacon did not intend to balance the members in this way. See Note C. at the end.—*J. S.*

[40] Bacon alludes to Ramus in the *De Augmentis* vi. 2., "De unicâ methodo et dichotomiis perpetuis nil attinet dicere. Fuit enim nubecula quædam doctrinæ quæ cito transiit: res certe simul et scientiis damnosissima," etc.

[41] In the *Advancement of Learning* and the *De Augmentis*, the schoolmen in particular are compared to the spider; a passage which has been misunderstood by a distinguished writer, whose judgments seem not unfrequently to be as hastily formed as they are fluently expressed, and who conceives that Bacon intended to condemn the study of psychology.

In speaking of the field and the garden, Bacon refers repectively to observations of Nature and artificial experiment; an instance of the "curiosa felicitas" of his metaphors.

[42] Fludd's work, entitled *Philosophia Moysaica*, was published in 1638.

[43] In the *Biographie Universelle* (Mersenne) it is incorrectly said that this work was published in 1636, and an idle story is mentioned that it was in reality written, not by Mersenne, but by Lord Herbert of Cherbury,—a story sufficiently refuted by its scrupulous and submissive orthodoxy.

larvata et veluti incantata reperiet; fascinum ni solverit interpretari non poterit " [44].

From (71) to (78) he speaks of the signs and tokens whereby the defects and worthlessness of the received sciences are made manifest. The origin of these sciences, the scanty fruits they have borne, the little progress they have made, all testify against them; as likewise the confessions of the authors who have treated of them, and even the general consent with which they have been received. " Pessimum," says Bacon, " omnium est augurium, quod ex consensu capitur in rebus intellectualibus " [45].

From (78) to (92) Bacon speaks of the causes of the errors which have hindered the progress of science; intending thereby to show that there is no reason to doubt the value of the reform which he is about to propose, because though in itself seemingly plain and obvious it has nevertheless remained so long unthought of. On the contrary, there is, he affirms, good reason for being surprised that even now any one should have thought of it.

The first of these causes is the comparative shortness of the periods which, out of the twenty-five centuries which intervene between Thales and Bacon's own time, have been really favourable to the progress of science. The second, that even during the more favourable times natural philosophy, the great mother of the sciences, has been for the most part neglected; men having of late chiefly busied themselves with theology, and among the Greeks and Romans with moral philosophy, " quæ ethnicis vice theologiæ erat". Moreover, even when men occupied themselves the most with natural philosophy (Bacon refers to the age of the early Greek physicists), much time was wasted through controversies and vain glory. Again, even those who have bestowed pains upon natural philosophy have seldom, especially in these latter times, given themselves wholly up to it. Thus, natural philosophy having been neglected and the sciences thereby severed from their root, it is no wonder that their growth has been stopped.

Another cause of their scanty progress, is that their true end, the benefit and relief of man's estate, has not been had in remembrance. This error Bacon speaks of in the *Advancement* as the greatest of all, coupling however therewith the relief of man's estate the glory of the Creator. Again, the right path for the advancement of knowledge has not only been neglected but blocked up, men having come not only to neglect experience but also to despise it. Also the reverence for antiquity has hindered progress; and here Bacon repeats the remark he had made in the *Advancement*, that antiquity was the world's youth, and the latter times its age [46].

Again, the progress of science has been hindered by too much respect for what

[44] So also in the *Valerius Terminus*, c. 17.: " That if any have had or shall have the power and resolution to fortify and inclose his mind against all anticipations, yet if he have not been or shall not be cautioned by the full understanding of the nature of the mind and spirit of man, and therein of the seats, pores, and passages both of knowledge and error, he hath not been, nor shall not be, possibly able to guide or keep on his course aright ".—*J. S.*

[45] He however excepts matters political and religious.

[46] This remark is in itself not new; we read, for instance, in the book of Esdras, that the world has lost its youth, and that the times begin to wax old. Nor is it new in the application here made of it. Probably several writers in the age which preceded Bacon's had already made it, for in that age men were no longer willing to submit to the authority of antiquity, and still felt bound to justify their dissent. Two writers may at any rate be mentioned by whom the thought is as distinctly expressed as by Bacon, namely Giordano Bruno and Otto Casmann; the former in the *Cena di Cenere*, the latter in the preface to his *Problemata Marina*, which was published in 1596, and therefore a few years later than the *Cena*, with which however it is not likely that Casmann was acquainted. Few writers of celebrity comparable to Bruno's appear to have been so little read.

I have quoted both passages in a note on the corresponding passage in [the first book of] the *De Augmentis*: that in the *Cena di Cenere* was first noticed by Dr. Whewell. See his *Philosophy of the Inductive Sciences*, ii. 198.

has been already accomplished. And this has been increased by the appearance of completeness which systematic writers on science have given to their works, and also by the vain and boastful promises of some who have pretended to reform philosophy. Another reason why more has not been accomplished, is that so little has been attempted.

To these hindrances Bacon adds three others,—superstitious bigotry, the constitution of schools, universities, and colleges, and the lack of encouragement; and then concludes this part of the subject with that which he affirms to have been the greatest obstacle of all, namely despair of the possibility of progress. To remove this, he goes on to state the grounds of hope for the future,—a discussion which extends from (93) to (115).

"Principium autem," he begins, "sumendum a Deo"; that is to say, the excellence of the end proposed is in itself an indication that the matter in hand is from God, nor is the prophecy of Daniel concerning the latter times to be omitted, namely that many shall go to and fro and knowledge shall be increased. Again, the errors committed in time past are a reason for hoping better things in the time to come. He therefore sets forth these errors at some length (95–107). This enumeration begins with the passage already mentioned [as occurring in the *Cogitata et Visa*], in which the true method is spoken of as intermediate to those of the dogmatici or rationales, and of the empirici. There will be, he concludes, good ground for hope when the experimental and reasoning faculties are more intimately united than they have ever yet been. So likewise when natural philosophy ceases to be alloyed with matter extraneous to it, and when any one can be found content to begin at the beginning and, putting aside all popularly received notions and opinions, to apply himself afresh to experiences and particulars. And here Bacon introduces an illustration which he has also employed elsewhere, comparing the regeneration of the sciences to the exploits of Alexander, which were at first esteemed portentous and more than human, and yet afterwards it was Livy's judgment that he had done no more than despise a vain show of difficulty. Bacon then resumes his enumeration of the improvements which are to be made, each of which will be a ground of hope. The first is a better natural history than has yet been composed; and it is to be observed that a natural history which is designed to contain the materials for the instauration of philosophy differs essentially from a natural history which has no such ulterior end: the chief difference is, that an ordinary natural history does not contain the experimental results furnished by the arts. In the second place, among these results themselves there is a great lack of experimenta lucifera, that is of experiments which, though not practically useful, yet serve to give light for the discovery of causes and axioms: hitherto men have busied themselves for the most part with experimenta fructifera, that is experiments of use and profit. Thirdly, experimental researches must be conducted orderly and according to rule and law, and not as hitherto in a desultory and irregular manner. Again, when the materials required have been collected, the mind will not be able to deal with them without assistance and memoriter: all discoveries ought to be based upon written records—"nulla nisi de scripto inventio probanda est". This is what Bacon calls experientia literata [47], his meaning apparently being that out of the storehouse of natural history all the facts connected with any proposed subject of investigation should be extracted and reduced to writing before anything else is done. Furthermore, all these facts must not only be reduced to writing, but arranged tabularly. In dealing with facts thus collected and arranged, we are to regard them chiefly as the materials for the construction of axioms, our path leading us upwards from particulars to axioms, and then downwards from axioms to works;

[47] "Illâ vero in usum veniente, ab experientiâ *factâ demum literatâ*, melius sperandum". In Montagu's edition *literatâ* is printed incorrectly with a capital letter; which makes it seem as if the *experientia facta literata* here spoken of were the same as the *experientia quam vocamus literatam* in Aph. 103. But they are, in fact, two different things; the one being opposed to experience which proceeds without any written record of its results; the other to *vaga experientia et se tantum sequens*—experience which proceeds without any method in its inquiries. See my note on Aph. 101.—*J. S.*

and the ascent from particulars to axioms must be gradual, that is axioms of a less degree of generality must always be established before axioms of a higher. Again a new form of induction is to be introduced ; for induction by simple enumeration is childish and precarious. But true induction analyses nature by rejections and exclusions, and concludes affirmatively after a sufficient number of negatives. And our greatest hope rests upon this way of induction. Also the axioms thus established are to be examined whether they are of wider generality than the particulars employed in their construction, and if so, to be verified by comparing them with other facts, " per novorum particularium designationem [48], quasi fide-jussione quâdam". Lastly, the sciences must be kept in connection with natural philosophy.

Bacon then goes on (108–114) to state divers grounds of hope derived from other sources than those of which he has been speaking, namely, the errors hitherto committed. The first is that without any method of invention men have made certain notable discoveries ; how many more, then, and greater, by the method now to be proposed. Again, of discoveries already made, there are many which before they were made would never have been conceived of as possible, which is a reason for thinking that many other things still remain to be found out of a nature wholly unlike any hitherto known. In the course of ages these too would doubtless some time or other come to light ; but by a regular method of discovery they will be made known far more certainly and in far less time,—*propere et subito et simul*. Bacon mentions particularly, as discoveries not likely to have been thought of beforehand, gun-powder, silk, and the mariner's compass ; remarking that if the conditions to be fulfilled had been stated, men would have sought for something far more akin than the reality to things previously known in the case of gun-powder, if its effects only had been described, they would have thought of some modification of the battering-ram or the catapult, and not of an expansive vapour ; and so in the other cases. He also mentions the art of printing as an invention perfectly simple when once made, and which nevertheless was only made after a long course of ages. Again, we may gain hope from seeing what an infinity of pains and labour men have bestowed on far less matters than that now in hand, of which if only a portion were given to the advancement of sound and real knowledge, all difficulties might be overcome. This remark Bacon makes with reference to his natural and experimental history, which he admits will be a great and royal work, and of much labour and cost. But the number of particulars to be observed ought not to deter us ; on the contrary, if we consider how much smaller it is than that of the figments of the understanding, we shall find even in this grounds for hope. To these figments, commenta ingenii, the phænomena of Nature and the arts are but a mere handful. Some hope too, Bacon thinks, may be derived from his own example ; for if, though of weak health, and greatly hindered by other occupations, and moreover in this matter altogether " protopirus " and following no man's track nor even communicating these things with any, he has been able somewhat to advance therein, how much may not be hoped for from the conjoined and successive labours of men at leisure from all other business ? Lastly, though the breeze of hope from that new world were fainter than it is, still it were worth while to follow the adventure, seeing how great a reward success would bring.

And here (115), Bacon says, concludes the pulling-down part, pars destruens, of the Instauration. It consists of three confutations ; namely, of the natural working of the mind, of received methods of demonstration, and of received theories or philosophies. In this division we perceive the influence of the first form of the doctrine of Idols. As the *Novum Organum* now stands, the pars destruens cannot be divided into three portions, each containing one of the confutations just mentioned. Thus, for instance, the doctrine of Idols, which undoubtedly forms a distinct section of the whole work, relates to all three. Errors natural to the mind, errors of demonstration, errors of theory, are all therein treated of ;

[48] I understand *designatio* here to mean *discovery*. The test of the truth of the axiom was to be the discovery by its light of *new* particulars. See *Valerius Terminus*, ch. xii., quoted in note on Aph. 106.—*J. S.*

and Bacon then goes on to another part of the subject, in which, though from a different point of view, they are all again considered. The sort of cross division here introduced is explained by a passage in the *Partis secundæ Delineatio*, in which the doctrine of Idols is introduced by the remark, "Pars destruens triplex est secundum triplicem naturam idolorum quæ mentem obsident". And then, after dividing idols into the three classes already mentioned, he proceeds thus:—"Itaque pars ista quam destruentem appellamus tribus redargutionibus absolvitur, redargutione philosophiarum, redargutione demonstrationum, et redargutione rationis humanæ nativæ". When the doctrine of Idols was thrown into its present form it ceased to afford a convenient basis for the pars destruens; and accordingly the substance of the three redargutiones is in the *Novum Organum* less systematically set forth than Bacon purposed that it should be when he wrote the *Partis secundæ Delineatio* [49]. It is to be remarked that *Redargutio Philosophiarum* is the title of one of the chapters in the third and last of the tracts published by Gruter with the title *Temporis Partus Masculus* [50], and that it is also the title of a tract published [by Stephens in 1734, and reprinted] by Mallet [in 1760 [51]], and evidently of a later date than the other of the same name.

From (116) to (128) Bacon endeavours to obviate objections and unfavourable opinions of his design. In the first place he plainly declares that he is no founder of a sect or school,—therein differing from the ancient Greeks, and from certain new men, namely Telesius, Patricius, and Severinus. Abstract opinions on nature and first principles are in his judgment of no great moment. Nor again does he promise to mankind the power of accomplishing any particular or special works—for with him works are not derived from works nor experiments from experiments, but causes and axioms are derived from both, and from these new works and experiments are ultimately deduced; and at present the natural history of which he is in possession is not sufficient for the purposes of legitimate interpretation, that is, for the establishment of axioms. Again, that his *Natural History* and *Tables of Invention* are not free from errors, which at first they cannot be, is not a matter of much importance. These errors, if not too numerous, will readily be corrected when causes and axioms have been discovered, just as errors in a manuscript or printed book are easily corrected by the meaning of the passage in which they occur. Again, it may be said that the *Natural History* contains many commonplace things; also many things mean and sordid; and lastly many things too subtle to be of any use. To this a threefold answer is to be given. In the first place, rare and notable things cannot be understood, much less new things brought to light, unless the causes of common things and their causes' causes be duly examined and searched out. Secondly, whatever is worthy of existence is also worthy to be known; for knowledge represents and is the image of existence.

[49] I think this apparent discrepancy may be better explained. It appears to me that the number of idols was originally three,—the Tribe, the Cave, and the Market-place; all belonging to the *ratio humana nativa*; fallacies innate or inherent in the human understanding,—to be guarded against, but not to be got rid of; and that a fourth was added afterwards, but of quite a different kind; consisting of fallacies which have no natural affinity to the understanding, but come from without and may be turned out again; impressions derived from the systems which men have been taught to accept as true, or from the methods of demonstration which they have been taught to rely upon as conclusive. These are the Idols of the Theatre, and the sole objects of the two Redargutiones which stand first in the *Delineatio*, and last in the *Novum Organum*. If this be true, the *Redargutio rationis humanæ nativæ* (or I should rather say, the part of the *Novum Organum* which belongs to it) extends from the 40th to the 60th aphorism; and the *Redargutio Philosophiarum* and *Demonstrationum* from the 61st to the 115th. For a fuller explanation and justification of this view, see Note C.—*J. S.*

[50] Say rather, "is the title prefixed by M. Bouillet to the second chapter of the fragment printed by Gruter with the heading *Tradendi modus legitimus*". I cannot find that M. Bouillet had any authority for giving it this title, more than the tenor of the chapter itself, which shows that it fits.—*J. S.*

[51] A small portion of it was printed by Gruter at the end of the *Partis secundæ Delineatio* [and it seems to have been the beginning of the *Pars secunda* itself].

Lastly, things apparently useless are in truth of the greatest use. No one will deny that light is useful, though it is not tangible or material. And the accurate knowledge of simple natures is as light, and gives access to all the secrets on which works depend, though in itself it is of no great use.

Again it may be thought a hard saying that all sciences and authors are at once to be set aside together. But in reality this is both a more modest censure and one that carries with it a greater show of reason than any partial condemnation. It implies only that the errors hitherto committed are fundamental, and that they have not been corrected because as yet they have not been sufficiently examined. It is no presumption if any man asserts that he can draw a circle more truly with a pair of compasses than another can without; and the new method puts men's understandings nearly on the same level, because everything is to be done by definite rules and demonstrations. Bacon anticipates also another objection, that he has not assigned to the sciences their true and highest aim; which is the contemplation of truth,—not works, however great or useful. He affirms that he values works more inasmuch as they are signs and evidences of truth than for their practical utility It may also, he continues, be alleged that the method of the ancients was in reality the same as ours, only that after they had constructed the edifice of the sciences they took away the scaffolding. But this is refuted both by what they themselves say of their method [52], and by what is seen of it in their writings. Again he affirms that he does not inculcate, as some might suppose, a [53] [final suspension of judgment, as if the mind were incapable of knowing anything; that if he enjoins caution and suspense it is not as doubting the competency of the senses and understanding, but for their better information and guidance; that the method of induction which he proposes is applicable not only to what is called natural philosophy, as distinguished from logic, ethics, and politics, but to every department of knowledge; the aim being to obtain an insight into the nature of things by processes varied according to the conditions of the subject; and that in declaring that no great progress can be expected either in knowledge of truth or in power of operation by the methods of inquiry hitherto employed, he means no disrespect to the received arts and sciences, but fully recognises them as excellent in their proper place and use, and would have them honoured and cultivated accordingly.

These explanations,—together with some remarks (129), by way of encouragement to followers and fellow-labourers, on the dignity, importance, and grandeur of the end in view,—bring the preliminary considerations to a close, and clear the way for the exposition of the art of interpretation itself; which is commenced, but not completed, in the second book. What this art was, has been fully discussed in the general preface, and it is not necessary therefore to follow the subject further here. Only it is important to remark that whatever value Bacon may have attached to it, he certainly did not at this time profess to consider it either as a thing absolutely necessary, or even as the thing most necessary, for any real progress in science. In the concluding aphorism of the first book he distinctly warns the reader that the precepts which he is about to give, though he believes them to be very useful and sound, and likely to prove a great help, are not offered either as perfect in themselves or as so indispensable that nothing can be done without them. Three things only he represents as indispensable: 1st, ut "justam naturæ et experientiæ historiam præsto haberent homines atque in eâ sedulo versarentur;" 2nd, "ut receptas opiniones et notiones deponerent;" 3rd, "ut mentem a generalissimis et proximis ab illis ad tempus cohiberent". These three conditions being secured, the art of interpretation (being indeed the true and natural operation of the mind when freed from impediments) might, he thinks, suggest itself without a teacher: "fore ut etiam vi propriâ et genuinâ mentis, absque aliâ arte, in formam nostram interpretandi incidere possent; est enim interpretatio verum et naturale opus mentis, demptis iis quæ obstant": an admission which helps to account for the fact that during the five years which he

[52] I have adopted here the correction introduced into the text of the present edition.

[53] Mr. Ellis had written thus far when the fever seized him. The remaining pages which complete the analysis of the first book, are mine.—*J. S.*

afterwards devoted to the development of his philosophy, he applied himself almost exclusively to the natural history ; leaving the exposition of his method of interpretation still incomplete. For it cannot be denied that, among the many things which remained to be done, the setting forward of the *Natural History* was, according to this view, the one which stood next in order of importance. In furtherance of the two other principal requisites, he had already done what he could. Every motive by which men could be encouraged to lay prejudices aside, and refrain from premature generalisations, and apply themselves to the sincere study of Nature, had already been laid before them. It remained to be seen whether his exhortations would bring other labourers into the field ; but in the mean time the question lay between the completion of the *Novum Organum*, which was not indispensable, and the commencement of the collection of a *Natural History*, which was ; and when he found that other labourers did *not* come forward to help, he naturally applied himself to the latter.]

NOTES

BY JAMES SPEDDING.

Note A.

I thought it better not to interrupt the reader with notes during the progress of the foregoing argument, but as some points are assumed in it upon which I shall have to express a different opinion hereafter, it may be well to notice them here; the rather because I fully concur in the conclusion notwithstanding.

1. It is assumed that the first book of *Valerius Terminus* was designed to comprehend a general survey of knowledge, such as forms the subject of the second book of the *Advancement of Learning* and of the last eight books of the *De Augmentis Scientiarum*, as well as the general reflexions and precepts, which form the subject of the first book of the *Novum Organum*;—to comprehend in short the whole first part of the Instauratio, together with the introductory portion of the second.

This is inferred from the description of the "Inventary" which was to be contained in the tenth chapter of *Valerius Terminus*, as compared with the contents of the second book of the *Advancement of Learning*.

Now my impression is that this Inventary would have corresponded, not to the second book of the *Advancement*, but only to a certain *Inventarium opum humanarum* which is there, and also in the *De Augmentis* (iii. 5), set down as a *desideratum*; and which was to be, not a general survey of all the departments of knowledge, but merely an appendix to one particular department; that, namely, which is called in the *Advancement Naturalis Magia, sive Physica operativa major*[1]; and in the *Catalogus Desideratorum* at the end of the *De Augmentis, Magia Naturalis, sive Deductio formarum ad opera*.

The grounds of this conclusion will be explained fully in their proper place.[2] It is enough at present to mark the point as disputable; and to observe that if this argument fails, there seems to be no reason for thinking that anything corresponding to the *first* part of the Instauratio entered into the design of *Valerius Terminus*; also that the principal ground here alleged for concluding that *Valerius Terminus* was written some time before the *Advancement*—a conclusion which involves one considerable difficulty—is taken away.

2. It is assumed also that *Valerius Terminus* was *not* to contain anything corresponding to the last four parts of the Instauratio, but was to be merely "a statement of Bacon's method, without professing to give either the collection of facts to which the method was to be applied, or the results thereby obtained".

This appears to be inferred chiefly from the title—viz. "Of the Interpretation of Nature".

Now it seems to me that this argument proves too much. For I find the same title given to another unfinished work—the *Temporis Partus Masculus*—of which we happen to know that it was meant to be in three books; the first to be entitled *Perpolitio et applicatio mentis*; the second, *Lumen Naturæ, seu formula Interpretationis*; the third, *Natura illuminata, sive Veritas Rerum*. The first would have corresponded therefore to the first book of the *Novum Organum*; the second, being a statement of the new method, to the second and remaining books; the third, being a statement of the application of the new method, to the sixth and last part of the Instauratio. It would seem from this that when Bacon designed the *Temporis Partus Masculus*, he had conceived

[1] See margin. It is to be observed that in Montagu's edition of the *Advancement* the titles in the margin are by some strange negligence omitted; so that the correspondence between the two Inventaries was the more easily overlooked.

[2] See my note at the end of Mr. Ellis's preface to *Valerius Terminus*.

the idea of a work embracing the entire field of the Instauratio (the first part only excepted), though less fully developed and differently distributed. And I see no sufficient reason for supposing that the design of the *Valerius Terminus* was less extensive.

3. "The *Temporis Partus Masculus* published by Gruter" is spoken of as probably or possibly "the same as the *Temporis Partus Maximus* mentioned by Bacon in his letter to Fulgenzio", and if so, the earliest of all his writings.

Now the writing or rather collection of writings here alluded to is that published not by Gruter but by M. Bouillet; in whose edition of the "Œuvres Philosophiques" the title *Temporis Partus Masculus* is prefixed to four distinct pieces. 1. A short prayer. 2. A fragment headed *Aphorismi et Consilia de auxiliis mentis et accensione luminis naturalis.* 3. A short piece entitled *De Interpretatione Naturæ sententiæ duodecim.* 4. A fragment in two chapters headed *Tradendi modus legitimus.* It is true that from the manner in which M. Bouillet has printed them, any one would suppose that he had Gruter's authority for collecting them all under the same general title. But it is not so. In Gruter's *Scripta philosophica* the title *Temporis Partus Masculus* appears in connexion with the first, and the first only. The last has indeed an undoubted claim to it upon other and better authority. But I can find no authority whatever for giving it to the other two. If therefore the resemblance of the names be thought a sufficient reason for identifying the *Partus Masculus* with the *Partus Maximus*, that identity must be understood as belonging to the first and fourth only. The grounds of that opinion and of my own dissent from it will be discussed in the proper place. With regard to the argument now in hand,—(viz. whether Bacon, when he wrote the *Temporis Partus Masculus*, had yet thought of producing a great work like the Instauratio)—it is enough perhaps to observe that at whatever period or periods of his life these four pieces were composed, they all belong to the second part of the Instauratio; not as prefaces or prospectuses, but as portions of the work itself; and that if none of them contains any allusion to the other parts, the same may be said of the first book of the *Novum Organum* itself; and therefore that we cannot be warranted in concluding from that fact that the plan of the Instauratio had not yet been conceived.

4. It is assumed that the work which Bacon contemplated when he wrote the *De Interpretatione Naturæ Proœmium* would not have contained the new method and its results (these being, according to his then intention, to be communicated only to chosen followers), but merely the general views of science which form the subject of the first book of the *Novum Organum*.

This seems to be gathered from what he says in the Proœmium concerning the manner in which the several parts of the work were to be published: "Publicandi autem ista ratio ea est, ut quæ ad ingeniorum correspondentias captandas et mentium areas purgandas pertinent, edantur in vulgus et per ora volitent: *reliqua per manus tradantur cum electione et judicio*": the "reliqua" being, as appears a little farther on, "ipsa Interpretationis formula et inventa per eandem": from which it seems to be inferred that the exposition of the new method was not only not to be *published* along with the rest of the work, but to be excluded from it altogether;—to be kept as a secret, and transmitted *orally*. The grounds of this opinion I shall examine more particularly in a subsequent note with reference to another question. The question with which we are now dealing is only whether at that time Bacon can be supposed to have "thought of producing a great work like the Instauratio": upon which I will only say that as an intention not to *publish* does not imply an intention not to *write*, so neither does an intention to write imply an intention to publish. And since there is nothing in the *Partis secundæ Delineatio* from which we can infer that even then he intended to *publish* the whole, I do not see how we can infer that the design of *composing* a great work like the Instauratio had been conceived in the interval between the writing of these two pieces. For as in the one case he may not have intended to publish what we know he did intend to write, so in the other he may have intended to write what we know he did not intend to publish. And indeed though the Proœmium stands in Gruter's volume by itself and we cannot know to which of Bacon's projected works on the Interpretation of Nature it was meant to be prefixed, there is none which it seems to fit so well as the *Temporis Partus Masculus*. Now the *Temporis Partus Masculus*, as we know from the titles of the three books above quoted, *was* to contain both the *formula Interpretationis* and the *inventa per eandem*.

All these points will be considered more at large when I come to state the grounds upon which I have assigned to each tract its place in this edition. In the meantime I am unwilling to let any conclusion of importance appear to rest upon them; and in the present case all inferences which are in any way dependent upon the assumptions which I have noticed as questionable may I think be freely dispensed with. That to bring in a new method of Induction was Bacon's central idea and original design, and that the idea of an *Instauratio Magna* came after, may in the absence of all evidence to the contrary be safely enough inferred from his own words in the *Advancement of Learning*; where after reporting a deficiency of the first magnitude in that department of knowledge which concerns the invention of sciences,—a deficiency proved by the barrenness and accounted for by the viciousness and incompetency of the *method of induction then in use*,—he adds, "This part of Invention, concerning the Invention of Sciences, I purpose, if God give me leave, hereafter to propound; having digested into two parts; whereof the one I term *Experientia Literata*, and the other *Interpretatio Naturæ*[3]; 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." This "Interpretatio Naturæ" can have been nothing else therefore than a new method of induction to supply the place of the vicious and incompetent method then in use; and since among all the reported "deficiencies" this is the only one which he himself proposes to supply,—for of the others he merely gives specimens to make his meaning clear,—we may, I think, safely conclude that this and no other was the great work which he was meditating when he wrote the *Advancement of Learning*. His expressions moreover seem to imply that this work was already begun and in progress; and seeing that the *Valerius Terminus* answers the description both in title and (so far as the first book goes, which is all we know of) in contents also, why may we not suppose that it was a commencement or a sketch of the very work he speaks of, and that of the fragment which has been preserved part was written before and part after? a supposition probable enough in itself, and by which at least one difficulty, which I shall mention hereafter[4], is effectually removed.

As an additional reason for thinking that the Idea of the Instauratio Magna was of later date than that of a work on the Interpretation of Nature, I may observe that the *name* Instauratio does not occur in any of Bacon's letters earlier than 1609. The earliest of his compositions in which it appears was probably the *Partis Instaurationis secundæ Delineatio et Argumentum*; but of this the date cannot be fixed with any certainty: and as Gruter is our only authority for it, and the word Instauratio appears in the title only, not in the body of the work, we cannot even be sure that it was originally there. If Gruter found a manuscript headed "Partis secundæ Delineatio, etc.", and evidently referring to the parts of the Instauratio Magna, he was likely enough to insert the word silently by way of explanation.

Note B.

The question is, how far, by what means, and with what motive, Bacon at one time wished to keep his system secret.

Let us first compare all the passages in which such an intention appears to be intimated, or such a practice alluded to; taking them in chronological order, as far as our knowledge of the dates of his various writings enables us to do so. These which follow are all that I have been able to find.

1. *Valerius Terminus*. Ch. 18.

"That the discretion anciently observed, though by the precedent of many vain persons and deceivers abused, of publishing part and reserving part to a private succession, and of publishing in such a manner whereby it may not be to the taste or capacity of all, *but shall as it were single and adopt his reader*, is not to be laid aside; both for the avoiding of abuse in the excluded, and the strengthening of affection in the admitted".

And again (Ch. 11.), "To ascend further by scale I do forbear, partly because it would

[3] The corresponding passage in the *De Augmentis* calls it "Interpretatio Naturae sive *Novum Organum*".

[4] See my note at the end of Mr. Ellis's Preface to the *Valerius Terminus*.

draw on the example to an over-great length, but chiefly because it would open that *which in this work I determine to reserve.*"

2. *Advancement of Learning.*

"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 those minds which are capable to lodge and harbour it*, than that which cometh with pugnacity and contention."

3. *Advancement of Learning.*

"Another diversity of method there is," [he is speaking of the different methods of "tradition", i.e. of communicating and transmitting knowledge] 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*. The pretence whereof [that is, of the enigmatical method] 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."

4. *Proœmium de Interpretatione Naturæ.*

"Publicandi autem ista ratio ea est, ut quæ ad ingeniorum correspondentias captandas et mentium areas purgandas pertinent, edantur in vulgus et per ora volitent; reliqua *per manus tradantur cum electione et judicio*. Nec me latet usitatum et tritum esse impostorum artificium, ut quædam a vulgo secernant nihilo iis ineptiis quas vulgo propinant meliora. Sed ego sine omni impostura, ex providentiâ sanâ prospicio, ipsam interpretationis formulam et inventa per eandem, *intra legitima et optata ingenia clausa*, vegetiora et munitiora futura."

5. *De Interpretatione Naturæ Sententiæ* XII.

De moribus Interpretis.

"Sit etiam in scientiâ quam adeptus est nec occultandâ nec proferendâ vanus, sed ingenuus et prudens: tradatque inventa non ambitiosè aut malignè, sed modo primum maxime vivaci et vegeto, id est ad injurias temporis munitissimo, et ad scientiam propagandam fortissimo, deinde ad errores pariendos innocentissimo, et ante omnia *qui sibi legitimum lectorem seponat.*"

6. *Temporis Partus Masculus.* C. 1.

An tu censes cum omnes omnium mentium aditus ac meatus obscurissimis idolis, iisdemque alte hærentibus et inustis, obsessi et obstructi sint, veris Rerum et nativis radiis sinceras et politas areas adesse? Nova invenienda est ratio quâ mentibus obductissimis illabi possimus. Ut enim phreneticorum deliramenta arte et ingenio subvertuntur, vi et contentione efferantur, omnino ita in hâc universali insaniâ mos gerendus est. Quid? leviores illæ conditiones, quæ ad legitimum scientiæ tradendæ modum pertinent, an tibi tam expeditæ et faciles videntur? ut modus innocens sit; d est nulli prorsus errori ansam et occasionem præbeat? ut vim quandam insitam et innatam habeat tum ad fidem conciliandam, tum ad pellendas injurias temporis, adeo ut scientia ita tradita, veluti planta vivax et vegeta, quotidie serpat et adolescat? ut *idoneum et legitimum sibi lectorem seponat et quasi adoptet?*"

7. *Cogitata et visa.*

"Itaque de re non modo perficiendâ sed et communicandâ et tradendâ (quâ par est curâ) cogitationem suscipiendam esse. Reperit autem homines in rerum scientiâ quam sibi videntur adepti, interdum proferendâ interdum occultandâ, famæ et ostentationi servire: quin et eos potissimum qui minus solida proponunt solere ea quæ adferunt obscurâ et ambiguâ luce venditare, ut facilius vanitati suæ velificare possint. Putare autem se id tractare quod ambitione aliquâ aut affectatione polluere minime dignum sit; sed tamen necessario eo decurrendum esse (nisi forte rerum et animorum valde imperitus esset, et prorsus inexplorato viam inire vellet) ut satis meminerit, inveteratos semper errores, tanquam phreneticorum deliramenta, arte et ingenio subverti, vi et contentione efferari. Itaque prudentiâ et morigeratione quâdam utendum (quanta cum simplicitate et candore conjungi potest) ut contradictiones ante extinguentur

quam excitentur. . . . . Venit ei itaque in mentem posse aliquid simplicius proponi, quod *in vulgus non editum*, saltem tamen ad rei tam salutaris abortum arcendum satis fortasse esse possit. Ad hunc finem parare se de naturâ opus quod errores minimâ asperitate destruere, et ad hominum mentes non turbide accedere possit; quod et facilius fore, quod non se pro duce gesturus, sed ex naturâ lucem præbiturus et sparsurus sit, ut duce postea non sit opus."

8. *Redargutio Philosophiarum* (the beginning of the *Pars secunda*, following the *Delineatio*).

"Omnem violentiam (ut jam ab initio professi sumus) abesse volumus: atque quod Borgia facetè de Caroli octavi expeditione in Italiam dixit; Gallos venisse in manibus cretam tenentes quâ diversoria notarent, non arma quibus perrumperent; similem quoque inventorum nostrorum et rationem et successum animo præcipimus; nimirum ut potius *animos hominum capaces et idoneos seponere et subire possint*, quam contra sentientibus molesta sint."

9. *Novum Organum*. I. 35.

"Dixit Borgia de expeditione Gallorum in Italiam, eos venisse cum cretâ in manibus, ut diversoria notarent, non cum armis, ut perrumperent: Itidem et nostra ratio est; ut doctrina nostra *animos idoneos et capaces subintret;* confutationum enim nullus est usus, ubi de principiis et ipsis notionibus atque etiam de formis demonstrationum dissentimus."

10. *De Augmentis Scientiarum*. VI. 2.

"Sequitur aliud methodi discrimen, priori [methodo ad filios, etc.], intentione affine, reipsâ fere contrarium. Hoc enim habet utraque methodus commune, ut *vulgus auditorum a selectis separet;* illud oppositum, quod prior introducit modum tradendi solito apertiorem; altera, de quâ jam dicemus, occultiorem. Sit igitur discrimen tale, ut altera methodus sit exoterica, altera acroamatica. Etenim quam antiqui adhibuerunt præcipue in edendis libris differentiam, eam nos transferimus ad ipsum modum tradendi. Quin etiam acroamatica ipsa apud veteres in usu fuit, atque prudentur et cum judicio adhibita. At acroamaticum sive ænigmaticum istud dicendi genus posterioribus temporibus dehonestatum est a plurimis, qui eo tanquam lumine ambiguo et fallaci abusi sunt ad merces suas adulterinas extrudendas. Intentio autem ejus ea esse videtur, *ut traditionis involucris vulgus (profanum scilicet) a secretis scientiarum summoveatur; atque illi tantum admittantur qui aut per manus magistrorum parabolarum interpretationem nacti sunt, aut proprio ingenii acumine et subtilitate intra velum penetrare possint.*"

These are all the passages I have been able to find, in which the advantage of keeping certain parts of knowledge reserved to a select audience is alluded to. And the question is whether the reserve which Bacon contemplated can be justly compared with that practised by the alchemists and others, who concealed their discoveries as "treasures of which the value would be decreased if others were allowed to share in it".

Now I would observe in the first place that though the expression "single and adopt his reader", or its equivalent, occurs in all these passages, and that too in immediate reference to the method of delivery or transmission, yet in many of them the object of so singling and adopting the reader was certainly *not* to keep the knowledge secret; for many, indeed most, of them relate to that part of the subject which Bacon never proposed to reserve, but which was designed "edi in vulgus et per ora volitare". The part which he proposed to reserve is distinctly defined in the fourth extract as "ipsa interpretationis formula et inventa per eandem"; the part to be published is "ea quæ ad ingeniorum correspondentias captandas et mentium areas purgandas pertinent". Now it is unquestionably to this latter part that the second, the eighth, and the ninth extracts refer. "Primo enim," he says in the *Partis secundæ Delineatio*, "mentis area æquanda et liberanda ab eis quæ hactenus recepta sunt". This he calls *Pars destruens;* and he proposes to begin with the *Redargutio Philosophiarum*, from the introduction to which the eighth extract is taken. And the other two must of course be classed with it. Thus the "animi capaces et idonei" which he wishes "seponere et subire", are clearly identified with the minds marked up with chalk as capable of lodging and harbouring the truth, which are spoken of in the *Advancement*.

Next to the *Pars destruens* came the *Pars præparans*, the object of which was to prepare men's expectations for what was coming, and by dislodging erroneous preconcep-

tions to make their minds ready for the reception of the truth. To this part belongs the seventh extract; and if the seventh, then the sixth, which evidently corresponds to it; and if the sixth, then the fifth, which is but the sixth condensed. Or if there be any doubt about the correspondence between the seventh and sixth, it will I think be removed by comparing them both with the following passage which winds up the description of the *Pars præparans* in the *Partis secundæ Delineatio*.

"Quod si cui supervacua videatur accurata ista nostra quam adhibemus ad mentes præparandas diligentia, atque cogitet hoc quiddam esse ex pompâ et in ostentationem compositum; itaque cupiat rem ipsam missis ambagibus et præstructionibus simpliciter exhiberi; certe optabilis nobis foret (si vera esset) hujusmodi insimulatio. Utinam enim tam proclive nobis esset difficultates et impedimenta vincere quam fastum inanem et falsum apparatum deponere. Verum hoc velimus homines existiment, nos haud inexplorato viam in tantâ solitudine inire, præsertim cum argumentum hujusmodi præ manibus habeamus quod tractandi imperitiâ perdere et veluti exponere nefas sit. Itaque ex perpenso et perspecto tam rerum quam animorum statu, duriores fere aditus ad hominum mentes quam ad res ipsas invenimus, ac tradendi labores inveniendi laboribus haud multo leviores experimur, atque, quŏd in intellectualibus res nova fere est, morem gerimus, et tam nostras cogitationes quam aliorum simul bajulamus. Omne enim idolum vanum arte atque obsequio ac debito accessu subvertitur, vi et contentione atque incursione subitâ et abruptâ efferatur. . . . . Quâ in re accedit et alia quædam difficultas ex moribus nostris non parva, quod constantissimo decreto nobis ipsi sancivimus, ut candorem nostrum et simplicitatem perpetuo retineamus, nec per vana ad vera aditum quæramus; sed ita obsequio nostro moderemur ut tamen non per artificium aliquod vafrum aut imposturam aut aliquid simile impostura, sed tantummodo per ordinis lumen et novorum super saniorem partem veterum sollertem insitionem, nos nostrorum votorum compotes fore speremus".

Now all this was to precede and prepare for the exposition of the method of induction itself—the "formula ipsa interpretationis"—which alone it was proposed to reserve; and therefore we must understand the *legitimus lector* of the fifth and sixth extracts, as corresponding with the "*animus capax et idoneus*" of the eighth and ninth; and with the mind "chalked and marked up" by truth as "capable to lodge and harbour it", of the second; and we must not suppose that the process of singling and adopting the fit reader was to be effected by any restraint in communication, or any obscurity in style, which should exclude others; but by presenting the truth in such a shape as should be least likely to shock prejudice or awaken contradiction, and most likely to win its way into those minds which were best disposed to receive it. The object was to propagate knowledge so that it should grow and spread: the difficulty anticipated was not in excluding auditors, but in finding them [5].

Thus I conceive that six out of the ten passages under consideration must be set aside as not bearing at all upon the question at issue. Of the four that remain, two must be set aside in like manner, because, though they directly allude to the practice of transmitting knowledge as a secret from hand to hand, they contain no evidence that Bacon approved of it. These are the third and the last, and come respectively from the *Advancement of Learning*, one of his earliest works, and from the *De Augmentis Scientiarum*, one of his latest. In both these works the object being to show in what departments the stock of knowledge then existing was defective, the various methods which have been or may be adopted for the transmission of knowledge are pointed out as a fit subject of inquiry, and the secret or enigmatical or acroamatic method is described among the rest; but it is described only, not recommended.

There remain therefore only the first and the fourth extracts to be considered; and it is true that in both of these Bacon intimates an intention to reserve the communica-

[5] It may be worth while perhaps to compare with these passages an expression which Bacon uses in his letter to Dr. Playfere,—proposing to him to translate the *Advancement of Learning* into Latin; where a similar meaning is conveyed under another image. "Wherefore since I have only taken upon me to ring a bell to call other wits together, which is the meanest office, it cannot but be consonant to my desire to have that bell heard as far as can be. And since they are but sparks which can work but upon matter prepared, I have the more reason to wish that those sparks may fly abroad, *that they may the better find and light upon those minds and spirits that are apt to be kindled.*"

tion of one part of his philosophy—the " formula ipsa interpretationis et inventa per eandem "—to certain fit and chosen persons. May we infer from the expressions which he there uses, that his object was to prevent it from becoming generally known, as being a treasure which would lose its value by being divulged ? Such a supposition seems to me inconsistent not only with all we know of his proceedings, purposes, and aspirations, but with the very explanation with which he himself accompanies the suggestion. The fruits which he anticipated from his philosophy were not only intended for the benefit of all mankind, but were to be gathered in another generation. Is it conceivable that at any time of his life he would have willingly foregone the aid of any single fellow-labourer, or that anything could have been more welcome than the prospect of a rapid and indefinite increase of those " legitima et optata ingenia " in whose hands it might be expected to thrive and spread ? But setting general probabilities aside, let us look at the reasons which he himself assigns for the precaution which he meditates. Ask why in *Valerius Terminus* he proposes to reserve part of his discovery to " a private succession ? " His answer is, first, " for the *prevention of abuse* in the excluded " ; that is, because if it should fall into incapable and unfit hands it will be misused and mismanaged : secondly, " for the *strengthening of affection* in the admitted " ; that is, because the fit and capable will take more interest in the work when they feel that it is committed to their charge. Ask again why in the *Proœmium* he proposes to keep the Formula of interpretation private,—" intra legitima et optata ingenia clausa ? " The answer is to the same effect—it will be " vegetior et munitior " ; it will flourish better and be kept safer. And certainly if we refer to any of the many passages in which he has either enumerated the obstructions which had hitherto hindered the progress of knowledge, or described the qualifications, moral and intellectual, and the order of proceeding, which he considered necessary for the successful prosecution of the new philosophy, we may easily understand why he anticipated more hindrance than help from a popular audience.

Upon a review of the evidence therefore I see no reason to suspect that he had any other motive for his proposed reserve than that which he himself assigns ; and I think we may conclude that he meant to withhold the publication of his Formula, not " as a secret of too much value to be lightly revealed ", but as a subject too abstruse to be handled successfully except by the fit and few.

Note C.

On some changes in Bacon's treatment of his doctrine of Idols.

" When the doctrine of Idols " (says Mr. Ellis) " was thrown into its present form " [i.e. the form in which it appears in the *Novum Organum*, as contrasted with that in which it appears in the *Partis secundæ Delineatio*], " it ceased to afford a convenient basis for the *pars destruens*, and accordingly the substance of the three *Redargutiones* is in the *Novum Organum* less systematically set forth than Bacon purposed that it should be when he wrote the *Partis secundæ Delineatio* ".

That the argument is set forth in the *Novum Organum* less systematically than Bacon originally intended, is no doubt true ; for when he wrote the " Partis secundæ *Delineatio* et *Argumentum* ", he meant to handle the subject regularly and completely, or (as he would himself have expressed it) " in Corpore tractatus justi " ; and this in the entrance of the *Novum Organum*, which is the " Pars secunda " itself, we are expressly warned not to expect. " Sequitur secunda pars Instaurationis, quæ artem ipsam interpretandi Naturam et verioris adoperationis Intellectûs exhibet : *neque eam ipsam tamen in Corpore tractatus justi ;* sed tantûm *digestam per summas, in Aphorismos.*" A succession of aphorisms, not formally connected with each other, was probably the most convenient form for setting forth all that was most important in those parts of his work which he had ready ; for without binding him to exhibit them in regular and apparent connexion, it left him at liberty to make the connexion as perfect and apparent as he pleased. But it has one disadvantage : the divisions between aphorism and aphorism tend to conceal from the eye the larger divisions between subject and subject. And hence arises the appearance (for I think it is only an appearance) of a deviation from the plan originally marked out for the treatment of the *pars destruens*. Between the publication of the *Advancement of Learning* and the composition of the *Novum Organum*, the doctrine of

Idols underwent one considerable modification; but not, I think, the one here supposed. That modification was introduced *before* the *Partis secundæ Delineatio* was drawn up; and after that I cannot find evidence of any substantial change.

I will first exhibit the successive aspects which the doctrine assumes, and then give what I suppose to be the true history of them.

In the *Advancement of Learning*, the Idols, native and adventitious, of the human mind are distributed into three kinds; not distinguished as yet by names, but corresponding respectively to those of the Tribe, the Cave, and the Market-place. In *Valerius Terminus*, they are distributed into four kinds: the Tribe, the Palace (corresponding with the Market-place), the Cave, and the Theatre. In the *Partis secundæ Delineatio* they are distributed again into three, but classified quite differently. The two great divisions of Adventitious and Native are retained: "aut adscititia sunt...nimirum quæ immigrârunt in mentem, etc., aut ea qua menti ipsi et substantiæ ejus inhærentia sunt et innata"; but the subdivisions are entirely changed;—the Adventitious being here divided into two kinds, neither of which is recognized at all in the *Advancement*; the Native, which are divided into two kinds in the *Advancement*, not being divided at all here, but classed together as one. In the *Advancement* we find nothing corresponding to the Idols of the Theatre, to which belong *both* the kinds of adventitious Idols mentioned in the *Delineatio*—those derived *ex philosophorum placitis*, and those derived *ex perversis legibus demonstrationum*;—in the *Delineatio* we find nothing corresponding to the Idols of the Market-place, which among those mentioned in the *Advancement* are alone entitled to be classed as adventitious. Thus the difference between the two appears at first to be total and radical, amounting to an entire rearrangement of all the classes. Instead of Idols of the Tribe, the Cave, and the Market-place, we find Idols of the Philosophies, the Demonstrations, and the Human Mind.

But the truth is that Bacon, being now engaged in laying out the large outlines of his subject, omits the minor distinctions which belong to the development of it in detail, and leaves the particular distribution and description of those "fallacies and false appearances" which are "inseparable from our nature and condition in life"—those namely which he had spoken of in the *Advancement*—to be handled in the work itself. Having, however, as he came into closer contact with his subject, foreseen the opposition which he must expect from prejudices and false appearances of another kind—prejudices which had no root in the mind itself, which were *not* "inseparable from our nature and condition of life",—mere immigrants and strangers that had come in and might be turned out,—namely, the belief in received systems and attachment to received methods of demonstration,—he had resolved to deal with these first; and therefore introduces them as a separate class, dividing them into two parts and assigning to each what we may call a separate chapter. These he afterwards called Idols of the Theatre, and treated them in the manner proposed; with this difference only—that he placed them last instead of first, and ran the two chapters into one.

This being allowed, it will be found that the one substantial change which the doctrine of Idols underwent was the admission of these Idola Theatri into the company, and that there is no real difference between the form of that doctrine as indicated in the *Delineatio* and as developed in the *Novum Organum*.

The only difficulty which this view of the subject presents is one which may be probably enough accounted for as an oversight of Bacon's own. I mean the classification of the Idola Fori, the source of which is no doubt extraneous, among the natives. Bacon was never very careful about subtle logical distinctions, and in this case his attention had not as yet been specially called to the point. For in the *Advancement of Learning*, though the great division between Native and Adventitious appears to be recognized in the margin, there is no hint of it in the text,—the particular Idols not being arranged with any reference to those two general heads; while in *Valerius Terminus* the larger division is not alluded to at all, and the order in which the four Idols are there enumerated,—the first and third being of one class, the second and fourth of the other,—seems to prove that no such classification was then in his mind. Besides, it is to be remembered that the Idola Fori, however distinct in their origin, are in their nature and qualities much nearer akin to the other two than to the Idola Theatri. For though they come from without, yet when they are once in they naturalise themselves and take up their abode along with the natives, produce as much confusion, and can as hardly be expelled. Philosophical systems may be exploded, false methods of demonstration

may be discarded, but intercourse of words is "inseparable from our condition in life."

At any rate, let the logical error implied be as large as it may, it is certain that Bacon did in fact always class these three together. Wherever he mentions the Idols of the Market-place with any reference to classification, they are grouped with those of the Tribe and the Cave, and distinguished from those of the Theatre. In the *Temporis Partus Masculus*, c. 2. (which is, I think, the earliest form of the *Redargutio Philosophiarum*, though probably of later date than the *Delineatio*) we find "Nam Idola quisque sua (*non* jam *scenæ* dico, sed præcipue *fori et specus* "), etc. In the *De Augmentis Scientiarum* where the four kinds of Idols are enumerated by name and in order, the line of separation is drawn not between the two first and the two last (as it would have been if Bacon had meant to balance the members of his classification on the "dichotomising principle", as suggested by Mr. Ellis, p. 225), but between the three first and the fourth; the Idola Fori being classed along with the Idola Tribûs and Specûs, as "quæ plane obsident mentem, neque evelli possunt", the Idola Theatri being broadly distinguished from them, as "quæ abnegari possunt et deponi", and which may therefore for the present be set aside. In the *Novum Organum* itself, though the divisions between aphorism and aphorism tend, as I have said, to obscure the divisions of subject, yet if we look carefully we shall see that the line of demarcation is drawn exactly in the same place, and almost as distinctly. For after speaking of the *three* first kinds of Idol, Bacon proceeds (Aph. 61.), "At Idola *Theatri* innata non sunt [like those of the Tribe and Cave] *nec occulto insinuata in Intellectum* [like those of the Market-place], sed ex fabulis theoriarum et perversis legibus demonstrationum plane indita et recepta". Lastly, in the *Distributio Operis*, where the particular Idols are not mentioned by name, but the more general classification of the *Delineatio* is retained, it is plain that under the class *Adscititia* he meant to include the Idols of the Theatre only—("adscititia vero immigrârunt in mentes hominum, vel ex philosophorum placitis et sectis, vel ex perversis legibus demonstrationum")—and therefore he must still have meant to include the Idols of the Market-place, along with the two first, under the class *Innata*.

It is worthy of remark however that, in the *Novum Organum* itself, the distinction between Adscititia and Innata disappears. And the fact probably is that when he came to describe the several Idols one by one, he became aware both of the logical inconsistency of classing the Idola Fori among the Innata, and of the practical inconvenience of classing them among the Adscititia, and therefore resolved to drop the dichotomy altogether and range them in four co-ordinate classes. And it is the removal of this boundary line which makes it *seem* at first sight as if the arrangement were quite changed, whereas it is in fact only inverted. According to the plan of the *Partis secundæ Delineatio* and also of the *Distributio Operis*, the confutation of the Immigrants,—that is, the *Redargutio Philosophiarum* and *Redargutio Demonstrationum*,—was to have the precedence, and the confutation of the Natives,—that is, the *Redargutio Rationis humanæ nativæ*,—was to follow. As it is, he begins with the last and ends with the first. And the reason of this change of plan is not difficult to divine. The *Redargutio Philosophiarum*, as he handles it, traverses a wider and more various field, and rises gradually into a strain of prophetic anticipation, after which the *Redargutio Rationis* would have sounded flat.

THE GREAT INSTAURATION
PROŒMIUM

FRANCIS OF VERULAM REASONED THUS WITH HIMSELF, AND JUDGED IT TO BE FOR THE INTEREST OF THE PRESENT AND FUTURE GENERATIONS THAT THEY SHOULD BE MADE ACQUAINTED WITH HIS THOUGHTS.

BEING convinced that the human intellect makes its own difficulties, not using the true helps which are at man's disposal soberly and judiciously; whence follows manifold ignorance of things, and by reason of that ignorance mischiefs innumerable; he thought all trial should be made, whether that commerce between the mind of man and the nature of things, which is more precious than anything on earth, or at least than anything that is of the earth, might by any means be restored to its perfect and original condition, or if that may not be, yet reduced to a better condition than that in which it now is. Now that the errors which have hitherto prevailed, and which will prevail for ever, should (if the mind be left to go its own way), either by the natural force of the understanding or by help of the aids and instruments of Logic, one by one correct themselves, was a thing not to be hoped for: because the primary notions of things which the mind readily and passively imbibes, stores up, and accumulates (and it is from them that all the rest flow) are false, confused, and overhastily abstracted from the facts; nor are the secondary and subsequent notions less arbitrary and inconstant; whence it follows that the entire fabric of human reason which we employ in the inquisition of nature is badly put together and built up, and like some magnificent structure without any foundation. For while men are occupied in admiring and applauding the false powers of the mind, they pass by and throw away those true powers which, if it be supplied with the proper aids and can itself be content to wait upon nature instead of vainly affecting to overrule her, are within its reach. There was but one course left, therefore,—to try the whole thing anew upon a better plan, and to commence a total reconstruction of sciences, arts, and all human knowledge, raised upon the proper foundations. And this, though in the project and undertaking it may seem a thing infinite and beyond the powers of man, yet when it comes to be dealt with it will be found sound and sober, more so than what has been done hitherto. For of this there is some issue; whereas in what is now done in the matter of science there is only a whirling round about, and perpetual agitation, ending where it began. And although he was well aware how solitary an enterprise it is, and how hard a thing to win faith and credit for, nevertheless he was resolved not to abandon either it or himself; nor to be deterred from trying and entering upon that one path which is alone open to the human mind. For better it is to make a beginning of that which may lead to something, than to engage in a perpetual struggle and pursuit in courses which have no exit. And certainly the two ways of contemplation are much like those two ways of action, so much celebrated, in this—that the one, arduous and difficult in the beginning, leads out at last into the open country; while the other, seeming at first sight easy and free from obstruction, leads to pathless and precipitous places.

Moreover, because he knew not how long it might be before these things would occur to any one else, judging especially from this, that he has found no man hitherto who has applied his mind to the like, he resolved to publish at once so much as he has been able to complete. The cause of which haste was not ambition for himself, but solicitude for the work; that in case of his death there might remain some outline and project of that which he had conceived, and some evidence likewise of his honest mind and inclination towards the benefit of the human race. Certain it is that all other ambition whatsoever seemed poor in his eyes compared with the work which he had in hand; seeing that the matter at issue is either nothing, or a thing so great that it may well be content with its own merit, without seeking other recompence.

EPISTLE DEDICATORY

TO OUR MOST GRACIOUS AND MIGHTY PRINCE AND LORD JAMES, BY THE GRACE OF GOD OF GREAT BRITAIN, FRANCE, AND IRELAND KING, DEFENDER OF THE FAITH, ETC.

Most Gracious and Mighty King,

YOUR Majesty may perhaps accuse me of larceny, having stolen from your affairs so much time as was required for this work. I know not what to say for myself. For of time there can be no restitution, unless it be that what has been abstracted from your business may perhaps go to the memory of your name and the honour of your age; if these things are indeed worth anything. Certainly they are quite new; totally new in their very kind: and yet they are copied from a very ancient model; even the world itself and the nature of things and of the mind. And to say truth, I am wont for my own part to regard this work as a child of time rather than of wit; the only wonder being that the first notion of the thing, and such great suspicions concerning matters long established, should have come into any man's mind. All the rest follows readily enough. And no doubt there is something of accident (as we call it) and luck as well in what men think as in what they do or say. But for this accident which I speak of, I wish that if there be any good in what I have to offer, it may be ascribed to the infinite mercy and goodness of God, and to the felicity of your Majesty's times; to which as I have been an honest and affectionate servant in my life, so after my death I may yet perhaps, through the kindling of this new light in the darkness of philosophy, be the means of making this age famous to posterity; and surely to the times of the wisest and most learned of kings belongs of right the regeneration and restoration of the sciences. Lastly, I have a request to make—a request no way unworthy of your Majesty, and which especially concerns the work in hand; namely, that you who resemble Solomon in so many things—in the gravity of your judgments, in the peacefulness of your reign, in the largeness of your heart, in the noble variety of the books which you have composed—would further follow his example in taking order for the collecting and perfecting of a Natural and Experimental History true and severe (unincumbered with literature and book-learning), such as philosophy may be built upon,—such, in fact, as I shall in its proper place describe: that so at length, after the lapse of so many ages, philosophy and the sciences may no longer float in air, but rest on the solid foundation of experience of every kind, and the same well examined and weighed. I have provided the machine, but the stuff must be gathered from the facts of nature. May God Almighty long preserve your Majesty!

Your Majesty's
Most bounden and devoted
Servant,
FRANCIS VERULAM,
CHANCELLOR.

THE GREAT INSTAURATION

[AUTHOR'S] PREFACE.

That the state of knowledge is not prosperous nor greatly advancing ; and that a way must be opened for the human understanding entirely different from any hitherto known, and other helps provided, in order that the mind may exercise over the nature of things the authority which properly belongs to it.

It seems to me that men do not rightly understand either their store or their strength, but overrate the one and underrate the other. Hence it follows, that either from an extravagant estimate of the value of the arts which they possess, they seek no further ; or else from too mean an estimate of their own powers, they spend their strength in small matters and never put it fairly to the trial in those which go to the main. These are as the pillars of fate set in the path of knowledge ; for men have neither desire nor hope to encourage them to penetrate further. And since opinion of store is one of the chief causes of want, and satisfaction with the present induces neglect of provision for the future, it becomes a thing not only useful, but absolutely necessary, that the excess of honour and admiration with which our existing stock of inventions is regarded be in the very entrance and threshold of the work, and that frankly and without circumlocution, stripped off, and men be duly warned not to exaggerate or make too much of them. For let a man look carefully into all that variety of books with which the arts and sciences abound, he will find everywhere endless repetitions of the same thing, varying in the method of treatment, but not new in substance, insomuch that the whole stock, numerous as it appears at first view, proves on examination to be but scanty. And for its value and utility it must be plainly avowed that that wisdom which we have derived principally from the Greeks is but like the boyhood of knowledge, and has the characteristic property of boys : it can talk, but it cannot generate ; for it is fruitful of controversies but barren of works. So that the state of learning as it now is appears to be represented to the life in the old fable of Scylla, who had the head and face of a virgin, but her womb was hung round with barking monsters, from which she could not be delivered. For in like manner the sciences to which we are accustomed have certain general positions which are specious and flattering ; but as soon as they come to particulars, which are as the parts of generation, when they should produce fruit and works, then arise contentions and barking disputations, which are the end of the matter and all the issue they can yield. Observe also, that if sciences of this kind had any life in them, that could never have come to pass which has been the case now for many ages—that they stand almost at a stay, without receiving any augmentations worthy of the human race ; insomuch that many times not only what was asserted once is asserted still, but what was a question once is a question still, and instead of being resolved by discussion is only fixed and fed ; and all the tradition and succession of schools is still a succession of masters and scholars, not of inventors and those who bring to further perfection the things invented. In the mechanical arts we do not find it so ; they, on the contrary, as having in them some breath of life, are continually growing and becoming more perfect. As originally invented they are commonly rude, clumsy, and shapeless ; afterwards they acquire new powers and more commodious arrangements and constructions ; in so far that men shall sooner leave the study and pursuit of them and turn to something else,

than they arrive at the ultimate perfection of which they are capable. Philosophy and the intellectual sciences, on the contrary, stand like statues, worshipped and celebrated, but not moved or advanced. Nay, they sometimes flourish most in the hands of the first author, and afterwards degenerate. For when men have once made over their judgments to others' keeping, and (like those senators whom they called *Pedarii*) have agreed to support some one person's opinion, from that time they make no enlargement of the sciences themselves, but fall to the servile office of embellishing certain individual authors and increasing their retinue. And let it not be said that the sciences have been growing gradually till they have at last reached their full stature, and so (their course being completed) have settled in the works of a few writers ; and that there being now no room for the invention of better, all that remains is to embellish and cultivate those things which have been invented already. Would it were so ! But the truth is that this appropriating of the sciences has its origin in nothing better than the confidence of a few persons and the sloth and indolence of the rest. For after the sciences had been in several parts perhaps cultivated and handled diligently, there has risen up some man of bold disposition, and famous for methods and short ways which people like, who has in appearance reduced them to an art, while he has in fact only spoiled all that the others had done. And yet this is what posterity like, because it makes the work short and easy, and saves further inquiry, of which they are weary and impatient. And if any one take this general acquiescence and consent for an argument of weight, as being the judgment of Time, let me tell him that the reasoning on which he relies is most fallacious and weak. For, first, we are far from knowing all that in the matter of sciences and arts has in various ages and places been brought to light and published ; much less, all that has been by private persons secretly attempted and stirred ; so neither the births nor the miscarriages of Time are entered in our records. Nor, secondly, is the consent itself and the time it has continued a consideration of much worth. For however various are the forms of civil polities, there is but one form of polity in the sciences ; and that always has been and always will be popular. Now the doctrines which find most favour with the populace are those which are either contentious and pugnacious, or specious and empty ; such, I say, as either entangle assent or tickle it. And therefore no doubt the greatest wits in each successive age have been forced out of their own course ; men of capacity and intellect above the vulgar having been fain, for reputation's sake, to bow to the judgment of the time and the multitude ; and thus if any contemplations of a higher order took light anywhere, they were presently blown out by the winds of vulgar opinions. So that Time is like a river, which has brought down to us things light and puffed up, while those which are weighty and solid have sunk. Nay, those very authors who have usurped a kind of dictatorship in the sciences and taken upon them to lay down the law with such confidence, yet when from time to time they come to themselves again, they fall to complaints of the subtlety of nature, the hiding-places of truth, the obscurity of things, the entanglement of causes, the weakness of the human mind ; wherein nevertheless they show themselves never the more modest, seeing that they will rather lay the blame upon the common condition of men and nature than upon themselves. And then whatever any art fails to attain, they ever set it down upon the authority of that art itself as impossible of attainment ; and how can art be found guilty when it is judge in its own cause ? So it is but a device for exempting ignorance from ignominy. Now for those things which are delivered and received, this is their condition : barren of works, full of questions ; in point of enlargement slow and languid ; carrying a show of perfection in the whole, but in the parts ill filled up ; in selection popular, and unsatisfactory even to those who propound them ; and therefore fenced round and set forth with sundry artifices. And if there be any who have determined to make trial for themselves, and put their own strength to the work of advancing the boundaries of the sciences, yet have they not ventured to cast themselves completely loose from received opinions or to seek their knowledge at the fountain ; but they think they have done some great thing if they do but add and intro-

duce into the existing sum of science something of their own ; prudently considering with themselves that by making the addition they can assert their liberty, while they retain the credit of modesty by assenting to the rest. But these mediocrities and middle ways so much praised, in deferring to opinions and customs, turn to the great detriment of the sciences. For it is hardly possible at once to admire an author and to go beyond him ; knowledge being as water, which will not rise above the level from which it fell. Men of this kind, therefore, amend some things, but advance little ; and improve the condition of knowledge, but do not extend its range. Some, indeed, there have been who have gone more boldly to work, and taking it all for an open matter and giving their genius full play, have made a passage for themselves and their own opinions by pulling down and demolishing former ones ; and yet all their stir has but little advanced the matter ; since their aim has been not to extend philosophy and the arts in substance and value, but only to change doctrines and transfer the kingdom of opinions to themselves ; whereby little has indeed been gained, for though the error be the opposite of the other, the causes of erring are the same in both. And if there have been any who, not binding themselves either to other men's opinions or to their own, but loving liberty, have desired to engage others along with themselves in search, these, though honest in intention, have been weak in endeavour. For they have been content to follow probable reasons, and are carried round in a whirl of arguments, and in the promiscuous liberty of search have relaxed the severity of inquiry. There is none who has dwelt upon experience and the facts of nature as long as is necessary. Some there are indeed who have committed themselves to the waves of experience, and almost turned mechanics ; yet these again have in their very experiments pursued a kind of wandering inquiry, without any regular system of operations. And besides they have mostly proposed to themselves certain petty tasks, taking it for a great matter to work out some single discovery ;—a course of proceeding at once poor in aim and unskilful in design. For no man can rightly and successfully investigate the nature of anything in the thing itself ; let him vary his experiments as laboriously as he will, he never comes to a resting-place, but still finds something to seek beyond. And there is another thing to be remembered ; namely, that all industry in experimenting has begun with proposing to itself certain definite works to be accomplished, and has pursued them with premature and unseasonable eagerness ; it has sought, I say, experiments of Fruit, not experiments of Light ; not imitating the divine procedure, which in its first day's work created light only and assigned to it one entire day ; on which day it produced no material work, but proceeded to that on the days following. As for those who have given the first place to Logic, supposing that the surest helps to the sciences were to be found in that, they have indeed most truly and excellently perceived that the human intellect left to its own course is not to be trusted ; but then the remedy is altogether too weak for the disease ; nor is it without evil in itself. For the Logic which is received, though it be very properly applied to civil business and to those arts which rest in discourse and opinion, is not nearly subtle enough to deal with nature; and in offering at what it cannot master, has done more to establish and perpetuate error than to open the way to truth.

Upon the whole therefore, it seems that men have not been happy hitherto either in the trust which they have placed in others or in their own industry with regard to the sciences ; especially as neither the demonstrations nor the experiments as yet known are much to be relied upon. But the universe to the eye of the human understanding is framed like a labyrinth ; presenting as it does on every side so many ambiguities of way, such deceitful resemblances of objects and signs, natures so irregular in their lines, and so knotted and entangled. And then the way is still to be made by the uncertain light of the sense, sometimes shining out, sometimes clouded over, through the woods of experience and particulars ; while those who offer themselves for guides are (as was said) themselves also puzzled, and increase the number of errors and wanderers. In circumstances so difficult neither the natural force of man's judgment nor even any accidental felicity offers any chance of success. No excellence of wit, no

repetition of chance experiments, can overcome such difficulties as these. Our steps must be guided by a clue, and the whole way from the very first perception of the senses must be laid out upon a sure plan. Not that I would be understood to mean that nothing whatever has been done in so many ages by so great labours. We have no reason to be ashamed of the discoveries which have been made, and no doubt the ancients proved themselves in everything that turns on wit and abstract meditation, wonderful men. But as in former ages, when men sailed only by observation of the stars, they could indeed coast along the shores of the old continent or cross a few small and mediterranean seas ; but before the ocean could be traversed and the new world discovered, the use of the mariner's needle, as a more faithful and certain guide, had to be found out ; in like manner the discoveries which have been hitherto made in the arts and sciences are such as might be made by practice, meditation, observation, argumentation, —for they lay near to the senses, and immediately beneath common notions ; but before we can reach the remoter and more hidden parts of nature, it is necessary that a more perfect use and application of the human mind and intellect be introduced.

For my own part at least, in obedience to the everlasting love of truth, I have committed myself to the uncertainties and difficulties and solitudes of the ways, and relying on the divine assistance have upheld my mind both against the shocks and embattled ranks of opinion, and against my own private and inward hesitations and scruples, and against the fogs and clouds of nature, and the phantoms flitting about on every side ; in the hope of providing at last for the present and future generations guidance more faithful and secure. Wherein if I have made any progress, the way has been opened to me by no other means than the true and legitimate humiliation of the human spirit. For all those who before me have applied themselves to the invention of arts have but cast a glance or two upon facts and examples and experience, and straightway proceeded, as if invention were nothing more than an exercise of thought, to invoke their own spirits to give them oracles. I, on the contrary, dwelling purely and constantly among the facts of nature, withdraw my intellect from them no further than may suffice to let the images and rays of natural objects meet in a point, as they do in the sense of vision ; whence it follows that the strength and excellency of the wit has but little to do in the matter. And the same humility which I use in inventing I employ likewise in teaching. For I do not endeavour either by triumphs of confutation, or pleadings of antiquity, or assumption of authority, or even by the veil of obscurity, to invest these inventions of mine with any majesty ; which might easily be done by one who sought to give lustre to his own name rather than light to other men's minds. I have not sought (I say) nor do I seek either to force or ensnare men's judgments, but I lead them to things themselves and the concordances of things, that they may see for themselves what they have, what they can dispute, what they can add and contribute to the common stock. And for myself, if in anything I have been either too credulous or too little awake and attentive, or if I have fallen off by the way and left the inquiry incomplete, nevertheless I so present these things naked and open, that my errors can be marked and set aside before the mass of knowledge be further infected by them ; and it will be easy also for others to continue and carry on my labours. And by these means I suppose that I have established for ever a true and lawful marriage between the empirical and the rational faculty, the unkind and ill-starred divorce and separation of which has thrown into confusion all the affairs of the human family.

Wherefore, seeing that these things do not depend upon myself, at the outset of the work I most humbly and fervently pray to God the Father, God the Son, and God the Holy Ghost, that remembering the sorrows of mankind and the pilgrimage of this our life wherein we wear out days few and evil, they will vouchsafe through my hands to endow the human family with new mercies. This likewise I humbly pray, that things human may not interfere with things divine, and that from the opening of the ways of sense and the increase of natural light there may arise in our minds no incredulity or darkness with regard to the divine mysteries ; but rather that the understanding being thereby purified and

purged of fancies and vanity, and yet not the less subject and entirely submissive to the divine oracles, may give to faith that which is faith's. Lastly, that knowledge being now discharged of that venom which the serpent infused into it, and which makes the mind of man to swell, we may not be wise above measure and sobriety, but cultivate truth in charity.

And now having said my prayers I turn to men; to whom I have certain salutary admonitions to offer and certain fair requests to make. My first admonition (which was also my prayer) is that men confine the sense within the limits of duty in respect of things divine: for the sense is like the sun, which reveals the face of earth, but seals and shuts up the face of heaven. My next, that in flying from this evil they fall not into the opposite error, which they will surely do if they think that the inquisition of nature is in any part interdicted or forbidden. For it was not that pure and uncorrupted natural knowledge whereby Adam gave names to the creatures according to their propriety, which gave occasion to the fall. It was the ambitious and proud desire of moral knowledge to judge of good and evil, to the end that man may revolt from God and give laws to himself, which was the form and manner of the temptation. Whereas of the sciences which regard nature, the divine philosopher declares that "it is the glory of God to conceal a thing, but it is the glory of the King to find a thing out". Even as though the divine nature took pleasure in the innocent and kindly sport of children playing at hide and seek, and vouchsafed of his kindness and goodness to admit the human spirit for his playfellow at that game. Lastly, I would address one general admonition to all; that they consider what are the true ends of knowledge, and that they seek it not either for pleasure of the mind, or for contention or for superiority to others, or for profit, or fame, or power, or any of these inferior things; but for the benefit and use of life; and that they perfect and govern it in charity. For it was from lust of power that the angels fell, from lust of knowledge that man fell; but of charity there can be no excess, neither did angel or man ever come in danger by it.

The requests I have to make are these. Of myself I say nothing; but in behalf of the business which is in hand I entreat men to believe that it is not an opinion to be held, but a work to be done; and to be well assured that I am labouring to lay the foundation, not of any sect of doctrine, but of human utility and power. Next, I ask them to deal fairly by their own interests, and laying aside all emulations and prejudices in favour of this or that opinion, to join in consultation for the common good; and being now freed and guarded by the securities and helps which I offer from the errors and impediments of the way, to come forward themselves and take part in that which remains to be done. Moreover, to be of good hope, nor to imagine that this Instauration of mine is a thing infinite and beyond the power of man, when it is in fact the true end and termination of infinite error; and seeing also that it is by no means forgetful of the conditions of mortality and humanity, (for it does not suppose that the work can be altogether completed within one generation, but provides for its being taken up by another); and finally that it seeks for the sciences not arrogantly in the little cells of human wit, but with reverence in the greater world. But it is the empty things that are vast: things solid are most contracted and lie in little room. And now I have only one favour more to ask (else injustice to me may perhaps imperil the business itself)—that men will consider well how far, upon that which I must needs assert (if I am to be consistent with myself), they are entitled to judge and decide upon these doctrines of mine; inasmuch as all that premature human reasoning which anticipates inquiry, and is abstracted from the facts rashly and sooner than is fit, is by me rejected (so far as the inquisition of nature is concerned), as a thing uncertain, confused, and ill built up; and I cannot be fairly asked to abide by the decision of a tribunal which is itself on its trial.

THE PLAN OF THE WORK.

The work is in six Parts :—

1. *The Divisions of the Sciences.*
2. *The New Organon ; or Directions concerning the Interpretation of Nature.*
3. *The Phenomena of the Universe ; or a Natural and Experimental History for the foundation of Philosophy.*
4. *The Ladder of the Intellect.*
5. *The Forerunners ; or Anticipations of the New Philosophy.*
6. *The New Philosophy ; or Active Science.*

The Arguments of the several Parts.

It being part of my design to set everything forth, as far as may be, plainly and perspicuously (for nakedness of the mind is still,as nakedness of the body once was, the companion of innocence and simplicity), let me first explain the order and plan of the work. I distribute it into six parts.

The first part exhibits a summary or general description of the knowledge which the human race at present possesses. For I thought it good to make some pause upon that which is received ; that thereby the old may be more easily made perfect and the new more easily approached. And I hold the improvement of that which we have to be as much an object as the acquisition of more. Besides which it will make me the better listened to ; for " He that is ignorant (says the proverb) receives not the words of knowledge, unless thou first tell him that which is in his own heart ". We will therefore make a coasting voyage along the shores of the arts and sciences received ; not without importing into them some useful things by the way.

In laying out the division of the sciences, however, I take into account not only things already invented and known, but likewise things omitted which ought to be there. For there are found in the intellectual as in the terrestial globe waste regions as well as cultivated ones. It is no wonder therefore if I am sometimes obliged to depart from the ordinary divisions. For in adding to the total you necessarily alter the parts and sections ; and the received divisions of the sciences are fitted only to the received sum of them as it stands now.

With regard to those things which I shall mark as omitted, I intend not merely to set down a simple title or a concise argument of that which is wanted. For as often as I have occasion to report anything as deficient, the nature of which is at all obscure, so that men may not perhaps easily understand what I mean or what the work is which I have in my head, I shall always (provided it be a matter of any worth) take care to subjoin either directions for the execution of such work, or else a portion of the work itself executed by myself as a sample of the whole ; thus giving assistance in every case either by work or by counsel. For if it were for the sake of my own reputation only and other men's interests were not concerned in it, I would not have any man think that in such cases merely some light and vague notion has crossed my mind, and that the things which I desire and offer at are no better than wishes ; when they are in fact things which men may certainly command if they will, and of which I have formed in my own mind a clear and detailed conception. For I do not propose merely to survey these regions in my mind, like an augur taking auspices, but to enter them like a general who means to take possession.—So much for the first part of the work.

Having thus coasted past the ancient arts, the next point is to equip the intellect for passing beyond. To the second part therefore belongs the doctrine

concerning the better and more perfect use of human reason in the inquisition of things, and the true helps of the understanding: that thereby (as far as the condition of mortality and humanity allows) the intellect may be raised and exalted, and made capable of overcoming the difficulties and obscurities of nature. The art which I introduce with this view (which I call *Interpretation of Nature*) is a kind of logic; though the difference between it and the ordinary logic is great; indeed immense. For the ordinary logic professes to contrive and prepare helps and guards for the understanding, as mine does; and in this one point they agree. But mine differs from it in three points especially; viz. in the end aimed at; in the order of demonstration; and in the starting point of the inquiry.

For the end which this science of mine proposes is the invention not of arguments but of arts; not of things in accordance with principles, but of principles themselves; not of probable reasons, but of designations and directions for works. And as the intention is different, so accordingly is the effect; the effect of the one being to overcome an opponent in argument, of the other to command nature in action.

In accordance with this end is also the nature and order of the demonstrations. For in the ordinary logic almost all the work is spent about the syllogism. Of induction the logicians seem hardly to have taken any serious thought, but they pass it by with a slight notice, and hasten on to the formulæ of disputation. I on the contrary reject demonstration by syllogism, as acting too confusedly, and letting nature slip out of its hands. For although no one can doubt that things which agree in a middle term agree with one another (which is a proposition of mathematical certainty), yet it leaves an opening for deception; which is this. The syllogism consists of propositions; propositions of words; and words are the tokens and signs of notions. Now if the very notions of the mind (which are as the soul of words and the basis of the whole structure) be improperly and overhastily abstracted from facts, vague, not sufficiently definite, faulty in short in many ways, the whole edifice tumbles. I therefore reject the syllogism; and that not only as regards principles (for to principles the logicians themselves do not apply it) but also as regards middle propositions; which, though obtainable no doubt by the syllogism, are, when so obtained, barren of works, remote from practice, and altogether unavailable for the active department of the sciences. Although therefore I leave to the syllogism and these famous and boasted modes of demonstration their jurisdiction over popular arts and such as are matter of opinion (in which department I leave all as it is), yet in dealing with the nature of things I use induction throughout, and that in the minor propositions as well as the major. For I consider induction to be that form of demonstration which upholds the sense and closes with nature, and comes to the very brink of operation, if it does not actually deal with it.

Hence it follows that the order of demonstration is likewise inverted. For hitherto the proceeding has been to fly at once from the sense and particulars up to the most general propositions, as certain fixed poles for the argument to turn upon, and from these to derive the rest by middle terms: a short way, no doubt, but precipitate; and one which will never lead to nature, though it offers an easy and ready way to disputation. Now my plan is to proceed regularly and gradually from one axiom to another, so that the most general are not reached till the last; but then when you do come to them you find them to be not empty notions, but well defined, and such as nature would really recognize as her first principles, and such as lie at the heart and marrow of things.

But the greatest change I introduce is in the form itself of induction and the judgment made thereby. For the induction of which the logicians speak, which proceeds by simple enumeration, is a puerile thing; concludes at hazard; is always liable to be upset by a contradictory instance; takes into account only what is known and ordinary; and leads to no result.

Now what the sciences stand in need of is a form of induction which shall analyse experience and take it to pieces, and by a due process of exclusion and rejection lead to an inevitable conclusion. And if that ordinary mode of judgment practised by the logicians was so laborious, and found exercise for such

great wits, how much more labour must we be prepared to bestow upon this other, which is extracted not merely out of the depths of the mind, but out of the very bowels of nature.

Nor is this all. For I also sink the foundations of the sciences deeper and firmer; and I begin the inquiry nearer the source than men have done heretofore; submitting to examination those things which the common logic takes on trust. For, first, the logicians borrow the principles of each science from the science itself; secondly, they hold in reverence the first notions of the mind; and lastly, they receive as conclusive the immediate informations of the sense, when well disposed. Now upon the first point, I hold that true logic ought to enter the several provinces of science armed with a higher authority than belongs to the principles of those sciences themselves, and ought to call those putative principles to account until they are fully established. Then with regard to the first notions of the intellect; there is not one of the impressions taken by the intellect when left to go its own way, but I hold it for suspected, and no way established, until it has submitted to a new trial and a fresh judgment has been thereupon pronounced. And lastly, the information of the sense itself I sift and examine in many ways. For certain it is that the senses deceive; but then at the same time they supply the means of discovering their own errors; only the errors are here, the means of discovery are to seek.

The sense fails in two ways. Sometimes it gives no information, sometimes it gives false information. For first, there are very many things which escape the sense, even when best disposed and no way obstructed; by reason either of the subtlety of the whole body, or the minuteness of the parts, or distance of place; or slowness or else swiftness of motion, or familiarity of object, or other causes. And again when the sense does apprehend a thing its apprehension is not much to be relied upon. For the testimony and information of the sense has reference always to man, not to the universe; and it is a great error to assert that the sense is the measure of things.

To meet these difficulties, I have sought on all sides diligently and faithfully to provide helps for the sense—substitutes to supply its failures, rectifications to correct its errors; and this I endeavour to accomplish not so much by instruments as by experiments. For the subtlety of experiments is far greater than that of the sense itself, even when assisted by exquisite instruments; such experiments, I mean, as are skilfully and artificially devised for the express purpose of determining the point in question. To the immediate and proper perception of the sense therefore I do not give much weight; but I contrive that the office of the sense shall be only to judge of the experiment, and that the experiment itself shall judge of the thing. And thus I conceive that I perform the office of a true priest of the sense (from which all knowledge in nature must be sought, unless men mean to go mad) and a not unskilful interpreter of its oracles; and that while others only profess to uphold and cultivate the sense, I do so in fact. Such then are the provisions I make for finding the genuine light of nature and kindling and bringing it to bear. And they would be sufficient of themselves, if the human intellect were even, and like a fair sheet of paper with no writing upon it. But since the minds of men are strangely possessed and beset, so that there is no true and even surface left to reflect the genuine rays of things, it is necessary to seek a remedy for this also.

Now the idols, or phantoms, by which the mind is occupied are either adventitious or innate. The adventitious come into the mind from without; namely, either from the doctrines and sects of philosophers, or from perverse rules of demonstration. But the innate are inherent in the very nature of the intellect, which is far more prone to error than the sense is. For let men please themselves as they will in admiring and almost adoring the human mind, this is certain: that as an uneven mirror distorts the rays of objects according to its own figure and section, so the mind, when it receives impressions of objects through the sense, cannot be trusted to report them truly, but in forming its notions mixes up its own nature with the nature of things.

And as the first two kinds of idols are hard to eradicate, so idols of this last kind cannot be eradicated at all. All that can be done is to point them out so

that this insidious action of the mind may be marked and reproved (else as fast as old errors are destroyed new ones will spring up out of the ill complexion of the mind itself, and so we shall have but a change of errors, and not a clearance); and to lay it down once for all as a fixed and established maxim, that the intellect is not qualified to judge except by means of induction, and induction in its legitimate form. This doctrine then of the expurgation of the intellect to qualify it for dealing with truth, is comprised in three refutations: the refutation of the Philosophies; the refutation of the Demonstrations; and the refutation of the Natural Human Reason. The explanation of which things, and of the true relation between the nature of things and the nature of the mind, is as the strewing and decoration of the bridal chamber of the Mind and the Universe, the Divine Goodness assisting; out of which marriage let us hope (and be this the prayer of the bridal song) there may spring helps to man, and a line and race of inventions that may in some degree subdue and overcome the necessities and miseries of humanity. This is the second part of the work.

But I design not only to indicate and mark out the ways, but also to enter them. And therefore the third part of the work embraces the Phenomena of the universe; that is to say, experience of every kind, and such a natural history as may serve for a foundation to build philosophy upon. For a good method of demonstration or form of interpreting nature may keep the mind from going astray or stumbling, but it is not any excellence of method that can supply it with the material of knowledge. Those however who aspire not to guess and divine but to discover and know; who propose not to devise mimic and fabulous worlds of their own, but to examine and dissect the nature of this very world itself; must go to facts themselves for everything. Nor can the place of this labour and search and worldwide perambulation be supplied by any genius or meditation or argumentation; no, not if all men's wits could meet in one. This therefore we must have, or the business must be for ever abandoned. But up to this day such has been the condition of men in this matter, that it is no wonder if nature will not give herself into their hands.

For first, the information of the sense itself, sometimes failing, sometimes false; observation, careless, irregular, and led by chance; tradition, vain and fed on humour; practice, slavishly bent upon its work; experiment, blind, stupid, vague, and prematurely broken off; lastly, natural history trivial and poor;—all these have contributed to supply the understanding with very bad materials for philosophy and the sciences.

Then an attempt is made to mend the matter by a preposterous subtlety and winnowing of argument. But this comes too late, the case being already past remedy; and is far from setting the business right or sifting away the errors. The only hope therefore of any greater increase or progress lies in a reconstruction of the sciences.

Of this reconstruction the foundation must be laid in natural history, and that of a new kind and gathered on a new principle. For it is in vain that you polish the mirror if there are no images to be reflected; and it is as necessary that the intellect should be supplied with fit matter to work upon, as with safeguards to guide its working. But my history differs from that in use (as my logic does) in many things,—in end and office, in mass and composition, in subtlety, in selection also and setting forth, with a view to the operations which are to follow.

For first, the object of the natural history which I propose is not so much to delight with variety of matter or to help with present use of experiments, as to give light to the discovery of causes and supply a suckling philosophy with its first food. For though it be true that I am principally in pursuit of works and the active department of the sciences, yet I wait for harvest-time, and do not attempt to mow the moss or to reap the green corn. For I well know that axioms once rightly discovered will carry whole troops of works along with them, and produce them, not here and there one, but in clusters. And that unseasonable and puerile hurry to snatch by way of earnest at the first works which come within reach, I utterly condemn and reject, as an Atalanta's apple that hinders the race. Such then is the office of this natural history of mine.

Next, with regard to the mass and composition of it: I mean it to be a history not only of nature free and at large (when she is left to her own course and does her work her own way),—such as that of the heavenly bodies, meteors, earth and sea, minerals, plants, animals,—but much more of nature under constraint and vexed; that is to say, when by art and the hand of man she is forced out of her natural state, and squeezed and moulded. Therefore I set down at length all experiments of the mechanical arts, of the operative part of the liberal arts, of the many crafts which have not yet grown into arts properly so called, so far as I have been able to examine them and as they conduce to the end in view. Nay (to say the plain truth) I do in fact (low and vulgar as men may think it) count more upon this part both for helps and safeguards than upon the other; seeing that the nature of things betrays itself more readily under the vexations of art than in its natural freedom.

Nor do I confine the history to Bodies; but I have thought it my duty besides to make a separate history of such Virtues as may be considered cardinal in nature. I mean those original passions or desires of matter which constitute the primary elements of nature; such as Dense and Rare, Hot and Cold, Solid and Fluid, Heavy and Light, and several others.

Then again, to speak of subtlety: I seek out and get together a kind of experiments much subtler and simpler than those which occur accidentally. For I drag into light many things which no one who was not proceeding by a regular and certain way to the discovery of causes would have thought of inquiring after; being indeed in themselves of no great use; which shows that they were not sought for on their own account; but having just the same relation to things and works which the letters of the alphabet have to speech and words—which, though in themselves useless, are the elements of which all discourse is made up.

Further, in the selection of the relations and experiments I conceive I have been a more cautious purveyor than those who have hitherto dealt with natural history. For I admit nothing but on the faith of eyes, or at least of careful and severe examination; so that nothing is exaggerated for wonder's sake, but what I state is sound and without mixture of fables or vanity. All received or current falsehoods also (which by strange negligence have been allowed for many ages to prevail and become established) I proscribe and brand by name; that the sciences may be no more troubled with them. For it has been well observed that the fables and superstitions and follies which nurses instil into children do serious injury to their minds; and the same consideration makes me anxious, having the management of the childhood as it were of philosophy in its course of natural history, not to let it accustom itself in the beginning to any vanity. Moreover, whenever I come to a new experiment of any subtlety (though it be in my own opinion certain and approved), I nevertheless subjoin a clear account of the manner in which I made it; that men knowing exactly how each point was made out, may see whether there be any error connected with it, and may arouse themselves to devise proofs more trustworthy and exquisite, if such can be found; and finally, I interpose everywhere admonitions and scruples, and cautions, with a religious care to eject, repress, and as it were exorcise every kind of phantasm.

Lastly, knowing how much the sight of man's mind is distracted by experience and history, and how hard it is at the first (especially for minds either tender or preoccupied) to become familiar with nature, I not unfrequently subjoin observations of my own, being as the first offers, inclinations, and as it were glances of history towards philosophy; both by way of an assurance to men that they will not be kept for ever tossing on the waves of experience, and also that when the time comes for the intellect to begin its work, it may find everything the more ready. By such a natural history then as I have described, I conceive that a safe and convenient approach may be made to nature, and matter supplied of good quality and well prepared for the understanding to work upon.

And now that we have surrounded the intellect with faithful helps and guards, and got together with most careful selection a regular army of divine works, it may seem that we have no more to do but to proceed to philosophy itself.

And yet in a matter so difficult and doubtful there are still some things which it seems necessary to premise, partly for convenience of explanation, partly for present use.

Of these the first is to set forth examples of inquiry and invention according to my method, exhibited by anticipation in some particular subjects; choosing such subjects as are at once the most noble in themselves among those under inquiry, and most different one from another; that there may be an example in every kind. I do not speak of those examples which are joined to the several precepts and rules by way of illustration (for of these I have given plenty in the second part of the work); but I mean actual types and models, by which the entire process of the mind and the whole fabric and order of invention from the beginning to the end, in certain subjects, and those various and remarkable, should be set as it were before the eyes. For I remember that in the mathematics it is easy to follow the demonstration when you have a machine besides you; whereas without that help all appears involved and more subtle than it really is. To examples of this kind,—being in fact nothing more than an application of the second part in detail and at large,—the fourth part of the work is devoted.

The fifth part is for temporary use only, pending the completion of the rest; like interest payable from time to time until the principal be forthcoming. For I do not make so blindly for the end of my journey, as to neglect anything useful that may turn up by the way. And therefore I include in this fifth part such things as I have myself discovered, proved, or added,—not however according to the true rules and methods of interpretation, but by the ordinary use of the understanding in inquiring and discovering. For besides that I hope my speculations may in virtue of my continual conversancy with nature have a value beyond the pretensions of my wit, they will serve in the meantime for wayside inns, in which the mind may rest and refresh itself on its journey to more certain conclusions. Nevertheless I wish it to be understood in the meantime that they are conclusions by which (as not being discovered and proved by the true form of interpretation) I do not at all mean to bind myself. Nor need any one be alarmed at such suspension of judgment, in one who maintains not simply that nothing can be known, but only that nothing can be known except in a certain course and way; and yet establishes provisionally certain degrees of assurance, for use and relief until the mind shall arrive at a knowledge of causes in which it can rest. For even those schools of philosophy which held the absolute impossibility of knowing anything were not inferior to those which took upon them to pronounce: But then they did not provide helps for the sense and understanding, as I have done, but simply took away all their authority: which is quite a different thing—almost the reverse.

The sixth part of my work (to which the rest is subservient and ministrant) discloses and sets forth that philosophy which by the legitimate, chaste, and severe course of inquiry which I have explained and provided is at length developed and established. The completion however of this last part is a thing both above my strength and beyond my hopes. I have made a beginning of the work —a beginning, as I hope, not unimportant:—the fortune of the human race will give the issue;—such an issue, it may be, as in the present condition of things and men's minds cannot easily be conceived or imagined. For the matter in hand is no mere felicity of speculation, but the real business and fortunes of the human race, and all power of operation. For man is but the servant and interpreter of nature: what he does and what he knows is only what he has observed of nature's order in fact or in thought; beyond this he knows nothing and can do nothing. For the chain of causes cannot by any force be loosed or broken, nor can nature be commanded except by being obeyed. And so those twin objects, human Knowledge and human Power, do really meet in one; and it is from ignorance of causes that operation fails.

And all depends on keeping the eye steadily fixed upon the facts of nature and so receiving their images simply as they are. For God forbid that we should

give out a dream of our own imagination for a pattern of the world; rather may he graciously grant to us to write an apocalypse or true vision of the footsteps of the Creator imprinted on his creatures.

Therefore do thou, O Father, who gavest the visible light as the first fruits of creation, and didst breathe into the face of man the intellectual light as the crown and consummation thereof, guard and protect this work, which coming from thy goodness returneth to thy glory. Thou when thou turnedst to look upon the works which thy hands had made, sawest that all was very good, and didst rest from thy labours. But man, when he turned to look upon the work which his hands had made, saw that all was vanity and vexation of spirit, and could find no rest therein. Wherefore if we labour in thy works with the sweat of our brows thou wilt make us partakers of thy vision and thy sabbath. Humbly we pray that this mind may be steadfast in us, and that through these our hands, and the hands of others to whom thou shalt give the same spirit, thou wilt vouchsafe to endow the human family with new mercies.

THE FIRST PART OF THE INSTAURATION,

WHICH COMPRISES THE DIVISIONS OF THE SCIENCES, IS WANTING.

But some account of them will be found in the Second Book of the "Proficience and Advancement of Learning, Divine and Human." [1]

Next comes

THE SECOND PART OF THE INSTAURATION,

WHICH EXHIBITS THE ART ITSELF OF INTERPRETING NATURE, AND OF THE TRUER EXERCISE OF THE INTELLECT;

Not however in the form of a regular Treatise, but only a Summary digested into Aphorisms.[2]

[*Notes by Mr. Spedding to the titles of the Latin originals.*]

[1] This is omitted in the common editions of Bacon's collected works (in all, I believe, except Montagu's); the *De Augmentis Scientiarum*, with the title "*Instaurationis Magnæ pars prima*" prefixed on a separate leaf, being substituted for it. And it is true that Bacon did afterwards decide upon supplying this deficiency by a translation of the *Advancement of Learning* enlarged; that he produced the *De Augmentis Scientiarum* with that intention and understanding; and that though the original edition does not bear "*Instaurationis Magnæ pars prima*" on the titlepage, yet in Dr. Rawley's reprint of it in 1638 those words were inserted. Nevertheless this notice is of importance, as showing that when Bacon published the *Novum Organum* he did not look to a mere *enlargement* of the *Advancement of Learning* as satisfying the intention of the *pars prima*; for if he had, he would have referred to the work itself, not to the second book only. He meant, no doubt, to reproduce the substance of it in a different form. And my own impression is that the *Descriptio Globi Intellectualis* was originally designed for this place, and that he had not yet abandoned the hope of completing it; but that soon after, —fortune gone, health shaken, assistance not to be commanded, and things of more importance remaining to be done,—he found he had not time to finish it on so large a scale, and therefore resolved to enlarge the old house instead of building a new one.—*J. S.*

[2] This explains a certain discrepancy between the design of the second part, as set forth in the *Distributio Operis*, and the execution of it in the *Novum Organum*. The *Distributio*, like the *Delineatio*, was probably written when Bacon intended to work it out in a regular and consecutive treatise, and represents the *idea* of the work more perfectly than the work itself.—*J. S.*

THE SECOND PART OF THE WORK, WHICH IS CALLED

THE NEW ORGANON;

OR, TRUE DIRECTIONS CONCERNING THE INTERPRETATION OF NATURE.

[AUTHOR'S] PREFACE.

Those who have taken upon them to lay down the law of nature as a thing already searched out and understood, whether they have spoken in simple assurance or professional affectation, have therein done philosophy and the sciences great injury. For as they have been successful in inducing belief, so they have been effective in quenching and stopping inquiry; and have done more harm by spoiling and putting an end to other men's efforts than good by their own. Those on the other hand who have taken a contrary course, and asserted that absolutely nothing can be known—whether it were from hatred of the ancient sophists, or from uncertainty and fluctuation of mind, or even from a kind of fulness of learning, that they fell upon this opinion,—have certainly advanced reasons for it that are not to be despised; but yet they have neither started from true principles nor rested in the just conclusion, zeal and affectation having carried them much too far. The more ancient of the Greeks (whose writings are lost) took up with better judgment a position between these two extremes,—between the presumption of pronouncing on everything, and the despair of comprehending anything; and though frequently and bitterly complaining of the difficulty of inquiry and the obscurity of things, and like impatient horses champing the bit, they did not the less follow up their object and engage with Nature; thinking (it seems) that this very question,—viz. whether or no anything can be known,—was to be settled not by arguing, but by trying. And yet they too, trusting entirely to the force of their understanding, applied no rule, but made everything turn upon hard thinking and perpetual working and exercise of the mind.

Now my method, though hard to practise, is easy to explain; and it is this. I propose to establish progressive stages of certainty. The evidence of the sense, helped and guarded by a certain process of correction, I retain. But the mental operation which follows the act of sense I for the most part reject; and instead of it I open and lay out a new and certain path for the mind to proceed in, starting directly from the simple sensuous perception. The necessity of this was felt no doubt by those who attributed so much importance to Logic; showing thereby that they were in search of helps for the understanding, and had no confidence in the native and spontaneous process of the mind. But this remedy comes too late to do any good, when the mind is already, through the daily intercourse and conversation of life, occupied with unsound doctrines and beset on all sides by vain imaginations. And therefore that art of Logic, coming (as I said) too late to the rescue, and no way able to set matters right again, has had the effect of fixing errors rather than disclosing truth. There remains but one course for the recovery of a sound and healthy condition,—namely, that the entire work of the understanding be commenced afresh, and the mind itself be from the very outset not left to take its own course, but guided at every step; and the business be done as if by machinery. Certainly if in things mechanical men had set to work with their naked hands, without help or force of instruments, just as in things intellectual they have set to work with little else than the naked forces of the understanding, very small would the matters have been which, even with their best efforts applied in conjunction, they could have attempted or accomplished. Now (to pause awhile upon this example and look in it as in a glass) let us suppose

that some vast obelisk were (for the decoration of a triumph or some such magnificence) to be removed from its place, and that men should set to work upon it with their naked hands ; would not any sober spectator think them mad ? And if they should send then for more people, thinking that in that way they might manage it, would he not think them all the madder ? And if they then proceeded to make a selection, putting away the weaker hands, and using only the strong and vigorous, would he not think them madder than ever ? And if lastly, not content with this, they resolved to call in aid the art of athletics, and required all their men to come with hands, arms, and sinews well anointed and medicated according to the rules of art, would he not cry out that they were only taking pains to show a kind of method and discretion in their madness ? Yet just so it is that men proceed in matters intellectual,— with just the same kind of mad effort and useless combination of forces,—when they hope great things either from the number and co-operation or from the excellency and acuteness of individual wits ; yea, and when they endeavour by Logic (which may be considered as a kind of athletic art) to strengthen the sinews of the understanding ; and yet with all this study and endeavour it is apparent to any true judgment that they are but applying the naked intellect all the time ; whereas in every great work to be done by the hand of man it is manifestly impossible, without instruments and machinery, either for the strength of each to be exerted or the strength of all to be united.

Upon these premises two things occur to me of which, that they may not be overlooked, I would have men reminded. First, it falls out fortunately as I think for the allaying of contradictions and heart-burnings, that the honour and reverence due to the ancients remains untouched and undiminished ; while I may carry out my designs and at the same time reap the fruit of my modesty. For if I should profess that I, going the same road as the ancients, have something better to produce, there must needs have been some comparison or rivalry between us (not to be avoided by any art of words) in respect of excellency or ability of wit ; and though in this there would be nothing unlawful or new (for if there be anything misapprehended by them, or falsely laid down, why may not I, using a liberty common to all, take exception to it ?) yet the contest, however just and allowable, would have been an unequal one perhaps, in respect of the measure of my own powers. As it is however,—my object being to open a new way for the understanding, a way by them untried and unknown,—the case is altered ; party zeal and emulation are at an end ; and I appear merely as a guide to point out the road ; an office of small authority, and depending more upon a kind of luck than upon any ability or excellency. And thus much relates to the persons only. The other point of which I would have men reminded relates to the matter itself.

Be it remembered then that I am far from wishing to interfere with the philosophy which now flourishes, or with any other philosophy more correct and complete than this which has been or may hereafter be propounded. For I do not object to the use of this received philosophy, or others like it, for supplying matter for disputations or ornaments for discourse,—for the professor's lecture and for the business of life. Nay more, I declare openly that for these uses the philosophy which I bring forward will not be much available. It does not lie in the way. It cannot be caught up in passage. It does not flatter the understanding by conformity with preconceived notions. Nor will it come down to the apprehension of the vulgar except by its utility and effects.

Let there be therefore (and may it be for the benefit of both) two streams and two dispensations of knowledge ; and in like manner two tribes or kindreds of students in philosophy—tribes not hostile or alien to each other, but bound together by mutual services ;—let there in short be one method for the cultivation, another for the invention, of knowledge.

And for those who prefer the former, either from hurry or from considerations of business or for want of mental power to take in and embrace the other (which must needs be most men's case), I wish that they may succeed to their desire in what they are about, and obtain what they are pursuing. But if any man there be who, not content to rest in and use the knowledge which has already been

discovered, aspires to penetrate further ; to overcome, not an adversary in argument, but nature in action ; to seek, not pretty and probable conjectures, but certain and demonstrable knowledge ;—I invite all such to join themselves, as true sons of knowledge, with me, that passing by the outer courts of nature, which numbers have trodden, we may find a way at length into her inner chambers. And to make my meaning clearer and to familiarise the thing by giving it a name, I have chosen to call one of these methods or ways *Anticipation of the Mind*, the other *Interpretation of Nature*.

Moreover I have one request to make. I have on my own part made it my care and study that the things which I shall propound should not only be true, but should also be presented to men's minds, how strangely soever preoccupied and obstructed, in a manner not harsh or unpleasant. It is but reasonable however (especially in so great a restoration of learning and knowledge) that I should claim of men one favour in return ; which is this ; If any one would form an opinion or judgment either out of his own observation, or out of the crowd of authorities, or out of the forms of demonstration (which have now acquired a sanction like that of judicial laws,) concerning these speculations of mine, let him not hope that he can do it in passage or by the by ; but let him examine the thing thoroughly ; let him make some little trial for himself of the way which I describe and lay out ; let him familiarize his thoughts with that subtlety of nature to which experience bears witness ; let him correct by seasonable patience and due delay the depraved and deep-rooted habits of his mind ; and when all this is done and he has begun to be his own master, let him (if he will) use his own judgment.

APHORISMS CONCERNING THE INTERPRETATION OF NATURE AND THE KINGDOM OF MAN.

APHORISM

I.

MAN, being the servant and interpreter of Nature, [1] can do and understand so much and so much only as he has observed in fact or in thought of the course of nature: beyond this he neither knows anything nor can do anything.

II.

Neither the naked hand nor the understanding left to itself can effect much. It is by instruments and helps that the work is done, which are as much wanted for the understanding as for the hand. And as the instruments of the hand either give motion or guide it, so the instruments of the mind supply either suggestions for the understanding or cautions.

III.

Human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed [2]; and that which in contemplation is as the cause is in operation as the rule.

IV.

Towards the effecting of works, all that man can do is to put together or put asunder natural bodies. The rest is done by nature working within [3].

V.

The study of nature with a view to works is engaged in by the mechanic, the mathematician, the physician, the alchemist, and the magician; but by all (as things now are) with slight endeavour and scanty success.[4]

VI.

It would be an unsound fancy and self-contradictory to expect that things which have never yet been done can be done except by means which have never yet been tried.

[1] That the physician is "naturæ minister", φυεσως ὑπηρέτης, is quoted more than once from Hippocrates by Galen, xv. 369, xvi. 35 (Kuhn): the first passage in his commentary on Hippoc. *De Aliment.* iii., the second in his do. *De Humor.* i.

[2] This antithesis was probably suggested by Publius Syrus's gnome:—"Casta ad virum matrona parendo imperat".

[The phrase occurs above, it will be noted, towards the end of the "Plan of the Work" and again below, Aph. 129. Dean Kitchin cites the parallel of Livy's account of Hannibal (xxi. 4) as "parendum atque imperandum" in his difficulties.—ED.]

[3] For some remarks upon the first four Aphorisms, see the Preface, p. 223.—*J. S.* [It will be observed that below, Aph. 75, Bacon appears to reject the formula here set down. In the parallel passage in the *De Augmentis* (B. II. c. ii.) he attempts to combine the two positions.—ED.]

[4] [Dean Kitchin has pointed out that "Bacon's remarks were being falsified at the very time he wrote. Mechanics had produced fly-clocks, telescopes, and other useful contrivances. Mathematics boasted of Kepler and Galileo; and the discoveries of Harvey and Gilbert were opening out a new world for medical research; but see p. 243".—ED.]

VII.

The productions of the mind and hand seem very numerous in books and manufactures. But all this variety lies in an exquisite subtlety and derivations from a few things already known ; not in the number of axioms.

VIII.

Moreover the works already known are due to chance and experiment rather than to sciences ; for the sciences we now possess are merely systems for the nice ordering and setting forth of things already invented ; not methods of invention or directions for new work.

IX.

The cause and root of nearly all evils in the sciences is this — that while we falsely admire and extol the powers of the human mind we neglect to seek for its true helps.

X.

The subtlety of nature is greater many times over than the subtlety of the senses and understanding ; so that all those specious meditations, speculations, and glosses in which men indulge are quite from the purpose [5], only there is no one by to observe it.

XI.

As the sciences which we now have do not help us in finding out new works, so neither does the logic which we now have help us in finding out new sciences.

XII.

The logic now in use serves rather to fix and give stability to the errors which have their foundation in commonly received notions than to help the search after truth. So it does more harm than good.

XIII.

The syllogism is not applied to the first principles of sciences, and is applied in vain to intermediate axioms ; being no match for the subtlety of nature. It commands assent therefore to the proposition, but does not take hold of the thing.

XIV.

The syllogism consists of propositions, propositions consist of words, words are symbols of notions. Therefore if the notions themselves (which is the root of the matter) are confused and over-hastily abstracted from the facts, there can be no firmness in the superstructure. Our only hope therefore lies in a true induction.

XV.

There is no soundness in our notions whether logical or physical. Substance, Quality, Action, Passion, Essence itself, are not sound notions : much less are Heavy, Light, Dense, Rare, Moist, Dry, Generation, Corruption, Attraction, Repulsion, Element, Matter, Form, and the like ; but all are fantastical and ill defined.

XVI.

Our notions of less general species, as Man, Dog, Dove, and of the immediate perceptions of the sense, as Hot, Cold, Black, White, do not materially mislead us ; yet even these are sometimes confused by the flux and alteration of matter and the mixing of one thing with another. All the others which men have hitherto adopted are but wanderings, not being abstracted and formed from things by proper methods.

[5] Literally, " are a thing insane ". The meaning appears to be, that these speculations being founded upon such an inadequate conception of the case, must necessarily be so wide of the truth that they would seem like mere madness if we could only compare them with it : like the aim of a man blindfolded to bystanders looking on.—*J. S.*

XVII.

Nor is there less of wilfulness and wandering in the construction of axioms than in the formation of notions ; not excepting even those very principles which are obtained by common induction ; but much more in the axioms and lower propositions educed by the syllogism.

XVIII

The discoveries which have hitherto been made in the sciences are such as lie close to vulgar notions, scarcely beneath the surface. In order to penetrate into the inner and further recesses of nature, it is necessary that both notions and axioms be derived from things by a more sure and guarded way ; and that a method of intellectual operation be introduced altogether better and more certain.

XIX.

There are and can be only two ways of searching into and discovering truth. The one flies from the senses and particulars to the most general axioms, and from these principles, the truth of which it takes for settled and immoveable, proceeds to judgment and to the discovery of middle axioms. And this way is now in fashion. The other derives axioms from the senses and particulars, rising by a gradual and unbroken ascent, so that it arrives at the most general axioms last of all. This is the true way, but as yet untried [6].

XX.

The understanding left to itself takes the same course (namely, the former) which it takes in accordance with logical order. For the mind longs to spring up to positions of higher generality, that it may find rest there ; and so after a little while wearies of experiment. But this evil is increased by logic, because of the order and solemnity of its disputations.

XXI.

The understanding left to itself, in a sober, patient, and grave mind, especially if it be not hindered by received doctrines, tries a little that other way, which is the right one, but with little progress ; since the understanding, unless directed and assisted, is a thing unequal, and quite unfit to contend with the obscurity of things.

XXII.

Both ways set out from the senses and particulars, and rest in the highest generalities ; but the difference between them is infinite. For the one just glances at experiment and particulars in passing, the other dwells duly and orderly among them. The one, again, begins at once by establishing certain abstract and useless generalities, the other rises by gradual steps to that which is prior and better known in the order of nature.

XXIII.

There is a great difference between the idols [7] of the human mind and the ideas of the divine. That is to say, between certain empty dogmas, and the true signatures and marks set upon the works of creation as they are found in nature.

XXIV.

It cannot be that axioms established by argumentation should avail for the discovery of new works ; since the subtlety of nature is greater many times over than

[6] [Compare the criticism of J. S. Mill on this Aphorism, in his *Logic*, B. VI. ch. v. § 5. —Ed.]

[7] [See above pp. 118, 223, as to the signification of "Idols." The word *idola*, as used by Bacon, means (as the context here shows) not objects of worship, but illusions or false appearances—the original sense of the Greek word. As Professor Fowler notes, Bacon in his *Cogitata et Visa* (14th par.) uses the word *spectra* with the same force as elsewhere *idola*. Compare Hallam, *Introduction to the Literature of Europe*, pt. III. ch. iii. § 60, where it is pointed out that the error of reading "idol" as "worshipped object" has been fallen into by Playfair, Brown, Dugald Stewart, and others.—Ed.]

the subtlety of argument. But axioms duly and orderly formed from particulars easily discover the way to new particulars, and thus render sciences active.

XXV.

The axioms now in use, having been suggested by a scanty and manipular experience and a few particulars of most general occurrence, are made for the most part just large enough to fit and take these in : and therefore it is no wonder if they do not lead to new particulars. And if some opposite instance, not observed or not known before, chance to come in the way, the axiom is rescued and preserved by some frivolous distinction ; whereas the truer course would be to correct the axiom itself.

XXVI.

The conclusions of human reason as ordinarily applied in matter of nature, I call for the sake of distinction *Anticipations of Nature* (as a thing rash or premature.) That reason which is elicited from facts by a just and methodical process, I call *Interpretation of Nature.*

XXVII.

Anticipations are a ground sufficiently firm for consent ; for even if men went mad all after the same fashion, they might agree one with another well enough.

XXVIII.

For the winning of assent, indeed, anticipations are far more powerful than interpretations ; because being collected from a few instances, and those for the most part of familiar occurrence, they straightway touch the understanding and fill the imagination ; whereas interpretations on the other hand, being gathered here and there from very various and widely dispersed facts, cannot suddenly strike the understanding ; and therefore they must needs, in respect of the opinions of the time, seem harsh and out of tune ; much as the mysteries of faith do.

XXIX.

In sciences founded on opinions and dogmas, the use of anticipations and logic is good ; for in them the object is to command assent to the proposition, not to master the thing.

XXX.

Though all the wits of all the ages should meet together and combine and transmit their labours, yet will no great progress ever be made in science by means of anticipations ; because radical errors in the first concoction of the mind are not to be cured by the excellence of functions and remedies subsequent.

XXXI.

It is idle to expect any great advancement in science from the superinducing and engrafting of new things upon old. We must begin anew from the very foundations, unless we would revolve for ever in a circle with mean and contemptible progress.

XXXII.

The honour of the ancient authors, and indeed of all, remains untouched ; since the comparison I challenge is not of wits or faculties, but of ways and methods, and the part I take upon myself is not that of a judge, but of a guide.

XXXIII.

This must be plainly avowed : no judgment can be rightly formed either of my method or of the discoveries to which it leads, by means of anticipations (that is to say, of the reasoning which is now in use) ; since I cannot be called on to abide by the sentence of a tribunal which is itself on its trial.

XXXIV.

Even to deliver and explain what I bring forward is no easy matter ; for things in themselves new will yet be apprehended with reference to what is old.

XXXV.

It was said by Borgia of the expedition of the French into Italy, that they came with chalk in their hands to mark out their lodgings, not with arms to force their way in [8]. I in like manner would have my doctrine enter quietly into the minds that are fit and capable of receiving it; for confutations cannot be employed, when the difference is upon first principles and very notions and even upon forms of demonstration.

XXXVI.

One method of delivery alone remains to us; which is simply this: we must lead men to the particulars themselves, and their series and order; while men on their side must force themselves for awhile to lay their notions by and begin to familiarise themselves with facts.

XXXVII.

The doctrine of those who have denied that certainty could be attained at all, has some agreement with my way of proceeding at the first setting out; but they end in being infinitely separated and opposed. For the holders of that doctrine assert simply that nothing can be known; I also assert that not much can be known in nature by the way which is now in use. But then they go on to destroy the authority of the senses and understanding; whereas I proceed to devise and supply helps for the same.

XXXVIII.

The Idols and false notions which are now in possession of the human understanding, and have taken deep root therein, not only so beset men's minds that truth can hardly find entrance, but even after entrance obtained, they will again in the very instauration of the sciences meet and trouble us, unless men being forewarned of the danger fortify themselves as far as may be against their assaults.

XXXIX.

There are four classes of Idols which beset men's minds. To these for distinction's sake I have assigned names, — calling the first class *Idols of the Tribe*; the second, *Idols of the Cave*; the third, *Idols of the Market-place*; the fourth, *Idols of the Theatre* [9].

[8] "Diceva in quei tempi Papa Alessandro sesto che i Francesi havevano corso l'Italia con gli speroni di legno et presola col gesso: dicendo cosi perchè pigliando essi gli alloggiamenti nelle città loro furieri segnavano le porte delle case col gesso; et cavalcando per loro diporto i gentil' huomini per le terre à sollazzo usavano di portare nelle scarpette à calcagni certi stecchi di legno appuntati, delli quali in vece di speroni si servivano per andare le cavalcature."—*Nardi, Vita di Malespini*, [1597,] p. 18.

In an epitome of the history of Charles the Eighth, which will be found in the "Archives curieuses" of Cember, vol. i. p. 197, and which was apparently written about the beginning of the seventeenth century, the remark ascribed to Alexander the Sixth by Nardi and Bacon is mentioned as a popular saying.

[9] These four idols have been compared to the four hindrances to truth enumerated by Roger Bacon. These are, the use of insufficient authority, custom, popular opinions, and the concealment of ignorance and display of apparent knowledge. The last two may be likened to the idols of the market-place and the theatre. But the principle of the classification is different. [See on this subject the Preface, p. 223. Roger Bacon's words are as follows:—

"Quatuor vero maxima sunt comprehendendæ veritatis offendicula, quæ omnem quemcunque sapientem impediunt, et vix aliquem permittunt ad verum titulum sapientiæ pervenire: viz. fragilis et indignæ auctoritatis exemplum, consuetudinis diuturnitas vulgi sensus imperiti, et propriæ ignorantiæ occultatio cum ostentatione sapientiæ apparentis. His omnis homo involvitur, omnis status occupatur. Nam quilibet singulis artibus vitæ et studii et omnis negotii tribus pessimis ad eandem conclusionem utitur argumentis: scil. hoc exemplificatum est per majores, hoc consuetum est, hoc vulgatum est, ergo tenendum. . . . Si vero hæc tria refellantur aliquando magnificâ rationis potentia, quartum semper in promptu est et in ore cujuslibet, ut quilibet ignorantiam suam

XL.

The formation of ideas and axioms by true induction is no doubt the proper remedy to be applied for the keeping off and clearing away of idols. To point them out, however, is of great use ; for the doctrine of Idols is to the Interpretation of Nature what the doctrine of the refutation of Sophisms is to common Logic.

XLI.

The Idols of the Tribe have their foundation in human nature itself, and in the tribe or race of men. For it is a false assertion that the sense of man is the measure of things [10]. On the contrary, all perceptions as well of the sense as of the mind are according to the measure of the individual and not according to the measure of the universe. And the human understanding is like a false mirror, which, receiving rays irregularly, distorts and discolours the nature of things by mingling its own nature with it.

XLII.

The Idols of the Cave[11] are the Idols of the individual man. For every one (besides the errors common to human nature in general) has a cave or den of his own, which refracts and discolours the light of nature ; owing either to his own proper and peculiar nature ; or to his education and conversation with others ; or to the reading of books, and the authority of those whom he esteems and admires ; or to the differences of impressions, accordingly as they take place in a mind preoc cupied and predisposed or in a mind indifferent and settled ; or the like. So that the spirit of man (according as it is meted out to different individuals [12]) is in fact a thing variable and full of perturbation, and governed as it were by chance. Whence it was well observed by Heraclitus that men look for sciences in their own lesser worlds, and not in the greater or common world [13].

XLIII.

There are also Idols formed by the intercourse and association of men with each other, which I call Idols of the Market-place, on account of the commerce and consort of men there. For it is by discourse that men associate ; and words are imposed according to the apprehension of the vulgar. And therefore the ill and unfit choice of words wonderfully obstructs the understanding. Nor do the definitions or explanations wherewith in some things learned men are wont to guard and defend themselves, by any means set the matter right. But words plainly force and overrule the understanding, and throw all into confusion, and lead men away into numberless empty controversies and idle fancies.

XLIV.

Lastly, there are Idols which have immigrated into men's minds from the various dogmas of philosophies, and also from wrong laws of demonstration. These I call Idols of the Theatre ; because in my judgment all the received systems are but so many stage-plays, representing worlds of their own creation after an unreal and scenic fashion. Nor is it only of the systems now in vogue, or only of the ancient sects and philosophies, that I speak ; for many more plays of the same kind

excuset, et licet nihil dignum sciat illud tamen magnificet imprudenter [impudenter ?] et sic saltem suæ stultitiæ infelici solatio veritatem opprimat et elidat."—*Opus Majus*, l. i.—*J. S.*]

[10] Protagoras. See Hippias major. [Professor Fowler justly notes that "if this is meant to represent the dictum of Protagoras it does so most inadequately". Protagoras was simply asserting the relativity of knowledge.—Ed.]

[11] [Compare Plato, *Republic*, B. vii.—Ed.]

[12] This was Mr. Ellis's translation of *prout disponitur in hominibus singulis* ; supposing Bacon to allude to Averroës' doctrine of one intellect, whereof each man had an undivided share. I should myself have understood *disponitur* as referring to the disposition of the parts of the spirit in itself, not to the distribution of it in different persons ; as in the expression *well disposed, ill disposed, etc.*—*J. S.*

[13] See Sextus Empiricus, *Adversus Logicos*, i. § 133 ; and compare ii. 286, of the same treatise.

may yet be composed and in like artificial manner set forth; seeing that errors the most widely different have nevertheless causes for the most part alike. Neither again do I mean this only of entire systems, but also of many principles and axioms in science, which by tradition, credulity, and negligence have come to be received.

But of these several kinds of Idols I must speak more largely and exactly, that the understanding may be duly cautioned.

XLV.

The human understanding is of its own nature prone to suppose the existence of more order and regularity in the world than it finds. And though there be many things in nature which are singular and unmatched, yet it devises for them parallels and conjugates and relatives which do not exist. Hence the fiction that all celestial bodies move in perfect circles [14]; spirals and dragons [15] being (except in name) utterly rejected. Hence too the element of Fire with its orb is brought in, to make up the square with the other three which the sense perceives [16]. Hence also the ratio of density of the so-called elements is arbitrarily fixed at ten to one [17]. And so on of other dreams. And these fancies affect not dogmas only, but simple notions also.

XLVI.

The human understanding when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects; in order that by this great and pernicious pre-determination [18] the authority of its former conclusions may remain inviolate. And therefore it was a good answer that was made by one who when they showed him hanging in a temple a picture of those who had paid their vows as having escaped shipwreck, and would have him say whether he did not now acknowledge the power of the gods,—"Aye," asked he again, "but where are they painted that were drowned after their vows?" [19] And such is the way of all superstition,

[14] [The Bohn editor remarks that "though Kepler had, when Bacon wrote this, already demonstrated his three great laws concerning the elliptical path of the planets, neither Bacon nor Descartes seems to have known or assented to his discoveries".—Ed.]

[15] It does not appear in what sense Bacon uses the word "draco". In its ordinary acceptation in old astronomy, it denoted the great circle which is approximately the projection on the sphere of the moon's orbit. The ascending node was called the caput draconis, and the descending the cauda draconis. The same terms were occasionally applied to the nodes of the planetary orbits. It is not improbable that Bacon intended to complain of the rejection of spirals of double curvature, or helices, which traced on the surface of the sphere might represent inequalities in latitude. Compare (Nov. Org. II. 48) what is said of the variations of which the "motus rotationis spontaneus" admits.

[16] The orb of the element of fire was supposed to lie above that of the element of air, and therefore might be said "non subjici sensui." The quaternion of elements follows directly from the quaternion of elementary qualities; namely, hot, cold, moist, dry. For these may be combined two and two in six different ways; two of these combinations are rejected as simply contradictory (viz. hot and cold, moist and dry); and to each of the other combinations corresponds one of the four elements.

[17] This doctrine of the decupla ratio of density of the elements was suggested by a passage in Aristotle [De Gen. et Cor. ii. 6.]. It is found in all books of mediæval physics. Cf. the *Margarita Philosophiæ*, ix. c. 4., or Alsted's *Encyclopædia*, where it is thus expressed: "Proportio elementorum ad se invicem ratione transmutationis est decupla, ratione magnitudinis non satis explorata." The transmutability of one element into another is an essential part of the Peripatetic doctrine of elements. It is found also in the *Timæus*.

[18] Rather perhaps "prejudging the matter to a great and pernicious extent, in order that," etc. (*non sine magno et pernicioso præjudicio, quo, etc.*)—*J. S.*

[19] This story is told of Diagoras by Cicero, *De Nat. Deor.* iii., and of Diogenes the Cynic by Diogenes Laërtius.

whether in astrology, dreams, omens, divine judgments, or the like ; wherein men, having a delight in such vanities, mark the events where they are fulfilled, but where they fail, though this happen much oftener, neglect and pass them by. But with far more subtlety does this mischief insinuate itself into philosophy and the sciences ; in which the first conclusion colours and brings into conformity with itself all that come after, though far sounder and better. Besides, independently of that delight and vanity which I have described, it is the peculiar and perpetual error of the human intellect to be more moved and excited by affirmatives than by negatives ; whereas it ought properly to hold itself indifferently disposed towards both alike. Indeed in the establishment of any true axiom, the negative instance is the more forcible of the two.

XLVII.

The human understanding is moved by those things most which strike and enter the mind simultaneously and suddenly, and so fill the imagination ; and then it feigns and supposes all other things to be somehow, though it cannot see how, similar to those few things by which it is surrounded. But for that going to and fro to remote and heterogeneous instances, by which axioms are tried as in the fire, the intellect is altogether slow and unfit, unless it be forced thereto by severe laws and overruling authority.

XLVIII.

The human understanding is unquiet ; it cannot stop or rest, and still presses onward, but in vain. Therefore it is that we cannot conceive of any end or limit to the world ; but always as of necessity it occurs to us that there is something beyond [20]. Neither again can it be conceived how eternity has flowed down to the present day ; for that distinction which is commonly received of infinity in time past and in time to come can by no means hold ; for it would thence follow that one infinity is greater than another, and that infinity is wasting away and tending to become finite. The like subtlety arises touching the infinite divisibility of lines, from the same inability of thought to stop [21]. But this inability interferes more mischievously in the discovery of causes : for although the most general principles in nature ought to be held merely positive, as they are discovered, and cannot with truth be referred to a cause ; nevertheless the human understanding being unable to rest still seeks something prior in the order of nature. And then it is that in struggling towards that which is further off it falls back upon that which is more nigh at hand ; namely, on final causes : which have relation clearly to the nature of man rather than to the nature of the universe [22], and from this source have strangely defiled philosophy. But he is no less an unskilled and shallow philosopher who seeks causes of that which is most general, than he who in things subordinate and subaltern omits to do so.

[20] Thus Leibnitz derived from the principle of sufficient reason a proof of the infinite extent of the universe, alleging that if it were of finite dimensions no reason could be given for its occupying any one region of space rather than any other.

[21] In the phrase " subtilitas de lineis semper divisibilibus," reference is made to Aristotle, who in several places in his writings (particularly in the tract *περὶ ἀτόμων γραμμάτων* maintains that in theory every magnitude is divisible without limit.

[22] This censure appears to be expressed without sufficient limitation ; for it is difficult to assent to the assertion that the notion of the final cause, considered generally, is more ex naturâ hominis than that of the efficient. The subject is one of which it is difficult to speak accurately ; but it may be said that wherever we think that we recognise a tendency towards a fulfilment or realisation of an idea, there the notion of the final cause comes in. It can only be from inadvertence that Professor Owen has set the doctrine of the final cause as it were in antithesis to that of the unity of type ; by the former he means the doctrine that the suitability of an animal to its mode of life is the one thing aimed at or intended in its structure. It cannot be doubted that Aristotle would have recognised the preservation of the type as not less truly a final cause than the preservation of the species or than the well-being of the individual. The final cause connects itself with what in the language of modern German philosophy is expressed by the phrase " the Idea in Nature ".

XLIX.

The human understanding is no dry light [23], but receives an infusion from the will and affections; whence proceed sciences which may be called "sciences as one would." For what a man had rather were true he more readily believes. Therefore he rejects difficult things from impatience of research; sober things, because they narrow hope; the deeper things of nature, from superstition; the light of experience, from arrogance and pride, lest his mind should seem to be occupied with things mean and transitory; things not commonly believed, out of deference to the opinion of the vulgar. Numberless in short are the ways, and sometimes imperceptible, in which the affections colour and infect the understanding.

L.

But by far the greatest hindrance and aberration of the human understanding proceeds from the dulness, incompetency, and deceptions of the senses; in that things which strike the sense outweigh things which do not immediately strike it, though they be more important. Hence it is that speculation commonly ceases where sight ceases; insomuch that of things invisible there is little or no observation. Hence all the working of the spirits inclosed in tangible bodies lies hid and unobserved of men. So also all the more subtle changes of form in the parts of coarser substances (which they commonly call alteration, though it is in truth local motion through exceedingly small spaces) is in like manner unobserved. And yet unless these two things just mentioned be searched out and brought to light, nothing great can be achieved in nature, as far as the production of works is concerned. So again the essential nature of our common air, and of all bodies less dense than air (which are very many), is almost unknown. For the sense by itself is a thing infirm and erring; neither can instruments for enlarging or sharpening the senses do much; but all the truer kind of interpretation of nature is effected by instances and experiments fit and apposite; wherein the sense decides touching the experiment only, and the experiment touching the point in nature and the thing itself.

LI.

The human understanding is of its own nature prone to abstractions, and gives a substance and reality to things which are fleeting. But to resolve nature into abstractions is less to our purpose than to dissect her into parts; as did the school of Democritus, which went further into nature than the rest. Matter rather than forms should be the object of our attention, its configurations and changes of configuration, and simple action, and law of action or motion; for forms are figments of the human mind, unless you will call those laws of action forms.

LII.

Such then are the idols which I call *Idols of the Tribe;* and which take their rise either from the homogeneity of the substance of the human spirit [24], or from its preoccupation, or from its narrowness, or from its restless motion, or from an infusion of the affections, or from the incompetency of the senses, or from the mode of impression.

[23] Heraclitus apud Plut., *De Esu Carnium*. This doctrine of Idols is spoken of with great disrespect by Spinoza. He asserts that neither Des Cartes nor Bacon ever perceived the true source of error, and adds: "De Bacone parum dicam, qui de hâc re admodum confuse loquitur, et fere nihil probat, sed tantum narrat:" and concludes by saying, "quas adhuc alias causas adsignat (he has just enumerated three of the Idols of the Tribe) facile omnes ad unicam Cartesii reduci possunt; scilicet quia voluntas humana est libera et latior intellectu; sive, ut ipse Verulamius magis confuse loquitur, quia intellectus luminis sicci non est, sed recipit infusionem a voluntate". See *Spinoza to Oldenburg*, ep. 2. vol. ii. p. 146, of Bruder's edition.

[24] Compare *Advanc. of Learning*: "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".—*J. S.*

LIII.

The *Idols of the Cave* take their rise in the peculiar constitution, mental or bodily, of each individual; and also in education, habit, and accident. Of this kind there is a great number and variety; but I will instance those the pointing out of which contains the most important caution, and which have most effect in disturbing the clearness of the understanding.

LIV.

Men become attached to certain particular sciences and speculations, either because they fancy themselves the authors and inventors thereof, or because they have bestowed the greatest pains upon them and become most habituated to them. But men of this kind, if they betake themselves to philosophy and contemplations of a general character, distort and colour them in obedience to their former fancies; a thing especially to be noticed in Aristotle, who made his natural philosophy a mere bond-servant to his logic, thereby rendering it contentious and well nigh useless. The race of chemists again out of a few experiments of the furnace have built up a fantastic philosophy, framed with reference to a few things; and Gilbert also, after he had employed himself most laboriously in the study and observation of the loadstone, proceeded at once to construct an entire system in accordance with his favourite subject [25].

LV.

There is one principal and as it were radical distinction between different minds, in respect of philosophy and the sciences; which is this: that some minds are stronger and apter to mark the differences of things, others to mark their resemblances. The steady and acute mind can fix its contemplations and dwell and fasten on the subtlest distinctions: the lofty and discursive mind recognises and puts together the finest and most general resemblances. Both kinds however easily err in excess, by catching the one at gradations the other at shadows.

LVI.

There are found some minds given to an extreme admiration of antiquity, others to an extreme love and appetite for novelty; but few so duly tempered that they can hold the mean, neither carping at what has been well laid down by the ancients, nor despising what is well introduced by the moderns. This however turns to the great injury of the sciences and philosophy; since these affectations of antiquity and novelty are the humours of partisans rather than judgments; and truth is to be sought for not in the felicity of any age, which is an unstable thing, but in the light of nature and experience, which is eternal. These factions therefore must be abjured, and care must be taken that the intellect be not hurried by them into assent.

LVII.

Contemplations of nature and of bodies in their simple form break up and distract the understanding, while contemplations of nature and bodies in their composition and configuration overpower and dissolve the understanding: a distinc-

[25] [This is one of several instances (Aph. 64, 70) in which Bacon speaks slightingly of Gilbert, whose work on the Magnet (1600) has stood scientific test so much better than most of Bacon's own scientific speculation. Whewell, in a letter to Spedding of Nov. 17, 1848, says of Bacon: "Almost the only matter for which I find reason to blame him is his injustice to Gilbert, whom he scarcely ever mentions, except to blame him for the narrowness of his method, but whose philosophy was really almost as wide as Bacon's own, and solid precisely on account of his starting from such a reality as magnetic forces" (*Life of Whewell*, 2nd ed. 1882, p. 355). Spedding in reply offers an interesting defence of Bacon (*Id.* pp. 358, 361–2). In the third edition of his *History of the Inductive Sciences* (1857) Whewell does not take up the same position; he even speaks of "Bacon's contemporary, Gilbert, whom he frequently praises as a philosopher" (i. 297), though in the later edition of the *Philosophy of Discovery* (1860, pp. 114–115) he leaves standing his blame of Bacon's unfairness.—Ed.]

tion well seen in the school of Leucippus and Democritus as compared with the other philosophies. For that school is so busied with the particles that it hardly attends to the structure ; while the others are so lost in admiration of the structure that they do not penetrate to the simplicity of nature. These kinds of contemplation should therefore be alternated and taken by turns ; that so the understanding may be rendered at once penetrating and comprehensive, and the inconveniences above mentioned, with the idols which proceed from them, may be avoided.

LVIII.

Let such then be our provision and contemplative prudence for keeping off and dislodging the *Idols of the Cave*, which grow for the most part either out of the predominance of a favourite subject, or out of an excessive tendency to compare or to distinguish, or out of partiality for particular ages, or out of the largeness or minuteness of the objects contemplated. And generally let every student of nature take this as a rule,—that whatever his mind seizes and dwells upon with peculiar satisfaction is to be held in suspicion, and that so much the more care is to be taken in dealing with such questions to keep the understanding even and clear.

LIX.

But the *Idols of the Market-place* are the most troublesome of all : idols which have crept into the understanding through the alliances of words and names. For men believe that their reason governs words ; but it is also true that words react on the understanding ; and this it is that has rendered philosophy and the sciences sophistical and inactive. Now words, being commonly framed and applied according to the capacity of the vulgar, follow those lines of division which are most obvious to the vulgar understanding. And whenever an understanding of greater acuteness or a more diligent observation would alter those lines to suit the true divisions of nature, words stand in the way and resist the change. Whence it comes to pass that the high and formal discussions of learned men end oftentimes in disputes about words and names ; with which (according to the use and wisdom of the mathematicians) it would be more prudent to begin, and so by means of definitions reduce them to order. Yet even definitions cannot cure this evil in dealing with natural and material things ; since the definitions themselves consist of words, and those words beget others : so that it is necessary to recur to individual instances, and those in due series and order ; as I shall say presently when I come to the method and scheme for the formation of notions and axioms.

LX.

The idols imposed by words on the understanding are of two kinds. They are either names of things which do not exist (for as there are things left unnamed through lack of observation, so likewise are there names which result from fantastic suppositions and to which nothing in reality corresponds), or they are names of things which exist, but yet confused and ill-defined, and hastily and irregularly derived from realities. Of the former kind are Fortune, the Prime Mover, Planetary Orbits, Element of Fire, and like fictions which owe their origin to false and idle theories. And this class of idols is more easily expelled, because to get rid of them it is only necessary that all theories should be steadily rejected and dismissed as obsolete.

But the other class, which springs out of a faulty and unskilful abstraction, is intricate and deeply rooted. Let us take for example such a word as *humid* ; and see how far the several things which the word is used to signify agree with each other ; and we shall find the word *humid* to be nothing else than a mark loosely and confusedly applied to denote a variety of actions which will not bear to be reduced to any constant meaning. For it both signifies that which easily spreads itself round any other body ; and that which in itself is indeterminate and cannot solidise ; and that which readily yields in every direction ; and that which easily divides and scatters itself ; and that which easily unites and collects itself ; and that which readily flows and is put in motion ; and that which readily clings to another body and wets it ; and that which is easily reduced to a liquid, or being

solid easily melts. Accordingly when you come to apply the word,—if you take it in one sense, flame is humid ; if in another, air is not humid ; if in another, fine dust is humid ; if in another, glass is humid. So that it is easy to see that the notion is taken by abstraction only from water and common and ordinary liquids, without any due verification.

There are however in words certain degrees of distortion and error. One of the least faulty kinds is that of names of substances, especially of lowest species and well-deduced (for the notion of *chalk* and of *mud* is good, of *earth* bad) ; a more faulty kind is that of actions, as to *generate, to corrupt, to alter* ; the most faulty is of qualities (except such as are the immediate objects of the sense) as *heavy, light, rare, dense*, and the like. Yet in all these cases some notions are of necessity a little better than others, in proportion to the greater variety of subjects that fall within the range of the human sense.

LXI.

But the *Idols of the Theatre* are not innate, nor do they steal into the understanding secretly, but are plainly impressed and received into the mind from the play-books of philosophical systems and the perverted rules of demonstration. To attempt refutations in this case would be merely inconsistent with what I have already said : for since we agree neither upon principles nor upon demonstrations there is no place for argument. And this is so far well, inasmuch as it leaves the honour of the ancients untouched. For they are no wise disparaged—the question between them and me being only as to the way. For as the saying is, the lame man who keeps the right road outstrips the runner who takes a wrong one. Nay it is obvious that when a man runs the wrong way, the more active and swift he is the further he will go astray.

But the course I propose for the discovery of sciences is such as leaves but little to the acuteness and strength of wits, but places all wits and understandings nearly on a level [26]. For as in the drawing of a straight line or a perfect circle, much depends on the steadiness and practice of the hand, if it be done by aim of hand only, but if with the aid of rule or compass, little or nothing ; so is it exactly with my plan. But though particular confutations would be of no avail, yet touching the sects and general divisions of such systems I must say something ; something also touching the external signs which show that they are unsound ; and finally something touching the causes of such great infelicity and of such lasting and general agreement in error ; that so the access to truth may be made less difficult, and the human understanding may the more willingly submit to its purgation and dismiss its idols.

LXII.

Idols of the Theatre, or of Systems, are many, and there can be and perhaps will be yet many more. For were it not that now for many ages men's minds have been busied with religion and theology ; and were it not that civil governments, especially monarchies, have been averse to such novelties, even in matters speculative ; so that men labour therein to the peril and harming of their fortunes, not only unrewarded, but exposed also to contempt and envy ; doubtless there would have arisen many other philosophical sects like to those which in great variety flourished once among the Greeks. For as on the phenomena of the heavens many hypotheses may be constructed, so likewise (and more also) many various dogmas may be set up and established on the phenomena of philosophy. And in the plays of this philosophical theatre you may observe the same thing which is found in the theatre of the poets, that stories invented for the stage are more compact and elegant, and more as one would wish them to be, than true stories out of history.

In general however there is taken for the material of philosophy either a great deal out of a few things, or a very little out of many things ; so that on both sides philosophy is based on too narrow a foundation of experiment and natural history, and decides on the authority of too few cases. For the Rational School of

[26] [This is one of the passages of Bacon on which Macaulay is justly severe. "Bacon's promise," adds Professor Fowler, "never has been and never can be fulfilled."—Ed.]

philosophers snatches from experience a variety of common instances, neither duly ascertained nor diligently examined and weighed, and leaves all the rest to meditation and agitation of wit.

There is also another class of philosophers, who having bestowed much diligent and careful labour on a few experiments, have thence made bold to educe and construct systems; wresting all other facts in a strange fashion to conformity therewith.

And there is yet a third class, consisting of those who out of faith and veneration mix their philosophy with theology and traditions; among whom the vanity of some has gone so far aside as to seek the origin of sciences among spirits and genii. So that this parent stock of errors—this false philosophy—is of three kinds; the Sophistical, the Empirical, and the Superstitious.

LXIII.

The most conspicuous example of the first class was Aristotle, who corrupted natural philosophy by his logic: fashioning the world out of categories; assigning to the human soul, the noblest of substances, a genus from words of the second intention [27]; doing the business of density and rarity (which is to make bodies of greater or less dimensions, that is, occupy greater or less spaces), by the frigid distinction of act and power; asserting that single bodies have each a single and proper motion [28], and that if they participate in any other, then this results from an external cause; and imposing countless other arbitrary restrictions on the nature of things; being always more solicitous to provide an answer to the question and affirm something positive in words, than about the inner truth of things; a failing best shown when his philosophy is compared with other systems of note among the Greeks. For the Homœomera of Anaxagoras; the Atoms of Leucippus and Democritus; the Heaven and Earth of Parmenides; the Strife and Friendship of Empedocles; Heraclitus's doctrine how bodies are resolved into the indifferent nature of fire, and remoulded into solids; have all of them some taste of the natural philosopher,—some savour of the nature of things, and experience, and bodies; whereas in the physics of Aristotle you hear hardly anything but the words of logic; which in his metaphysics also, under a more imposing name, and more forsooth as a realist than a nominalist, he has handled over again. Nor let any weight be given to the fact, that in his books on animals and his problems, and other of his treatises, there is frequent dealing with experiments. For he had come to his conclusion before; he did not consult experience, as he should have done, in order to the framing of his decisions and axioms; but having first determined the question according to his will, he then resorts to experience, and bending her into conformity with his placets leads her about like a captive in a procession; so that even on this count he is more guilty than his modern followers, the schoolmen, who have abandoned experience altogether.

LXIV.

But the Empirical school of philosophy gives birth to dogmas more deformed and monstrous than the Sophistical or Rational school. For it has its foundations not in the light of common notions, (which though it be a faint and superficial light, is yet in a manner universal, and has reference to many things [29],) but in the narrowness and darkness of a few experiments. To those therefore who are daily busied with these experiments, and have infected their imagination with them, such a philosophy seems probable and all but certain; to all men else incredible and vain. Of this there is a notable instance in the alchemists and their dogmas; though it is hardly to be found elsewhere in these times, except perhaps in the philosophy of Gilbert. Nevertheless with regard to philosophies

[27] This censure refers to Aristotle's definition of the soul (*De Anima*, ii. 1).

[28] "Simplicis corporis simplicem esse motum" is an important principle in Aristotelian physics, as one of the bases on which the system of the universe was made to depend. See, for instance, Melanchthon's *Initia Doctr. Physicæ*, p. 41.

[29] *Admulta pertinens*. In the formation of such notions many things have been taken into account.—*J. S.*

of this kind there is one caution not to be omitted ; for I foresee that if ever men are roused by my admonitions to betake themselves seriously to experiment and bid farewell to sophistical doctrines, then indeed through the premature hurry of the understanding to leap or fly to universals and principles of things, great danger may be apprehended from philosophies of this kind ; against which evil we ought even now to prepare.

LXV.

But the corruption of philosophy by superstition and an admixture of theology is far more widely spread, and does the greatest harm, whether to entire systems or to their parts. For the human understanding is obnoxious to the influence of the imagination no less than to the influence of common notions. For the contentious and sophistical kind of philosophy ensnares the understanding ; but this kind, being fanciful and tumid and half poetical, misleads it more by flattery. For there is in man an ambition of the understanding, no less than of the will, especially in high and lofty spirits.

Of this kind we have among the Greeks a striking example in Pythagoras, though he united with it a coarser and more cumbrous superstition ; another in Plato and his school, more dangerous and subtle. It shows itself likewise in parts of other philosophies, in the introduction of abstract forms and final causes and first causes, with the omission in most cases of causes intermediate, and the like. Upon this point the greatest caution should be used. For nothing is so mischievous as the apotheosis of error ; and it is a very plague of the understanding for vanity to become the object of veneration. Yet in this vanity some of the moderns [30] have with extreme levity indulged so far as to attempt to found a system of natural philosophy on the first chapter of Genesis, on the book of Job, and other parts of the sacred writings ; seeking for the dead among the living [31] : which also makes the inhibition and repression of it the more important, because from this unwholesome mixture of things human and divine there arises not only a fantastic philosophy but also an heretical religion. Very meet it is therefore that we be sober-minded, and give to faith that only which is faith's [32].

LXVI.

So much then for the mischievous authorities of systems, which are founded either on common notions, or on a few experiments, or on superstition. It remains to speak of the faulty subject-matter of contemplations, especially in natural philosophy. Now the human understanding is infected by the sight of what takes place in the mechanical arts, in which the alteration of bodies proceeds chiefly by composition or separation, and so imagines that something similar goes on in the universal nature of things. From this source has flowed the fiction of elements, and of their concourse for the formation of natural bodies. Again, when man contemplates nature working freely, he meets with different species of things, of animals, of plants, of minerals ; whence he readily passes into the opinion that there are in nature certain primary forms which nature intends to educe, and that the remaining variety proceeds from hindrances and aberrations of nature in the fulfilment of her work, or from the collision of different species and the transplanting of one into another. To the first of these speculations we owe our primary qualities of the elements [33] ; to the other our occult properties [34] and

[30] [Professor Fowler notes that the allusion here is probably to Dr. Robert Fludd. See notes to B. II. Aph. xiii. § 38, and to *De Augmentis*, B. II. c. xiii.—Ed.]

[31] [See Luke xxiv. 5. The phrase occurs several times in Bacon.—Ed.]

[32] [Professor Fowler remarks that "We must recollect that sentiments of this kind, which with us have become commonplaces, were in Bacon's time novel and almost paradoxical".—Ed.]

[33] The elementary qualities are four in number,—hot, cold, dry, moist ; and it is by combining them two and two that the Peripatetic conception of the nature of each element is formed. Thus fire is hot and dry, water cold and moist, etc. All the other qualities of bodies, which result from the combination and mutual modification of the elementary and primary qualities, were called secondary qualities.

[34] [Compare Newton's *Optics*, B. iii.—Ed.]

specific virtues ; and both of them belong to those empty *compendia* of thought wherein the mind rests, and whereby it is diverted from more solid pursuits. It is to better purpose that the physicians bestow their labour on the secondary qualities of matter, and the operations of attraction, repulsion, attenuation, conspissation, dilatation, astriction, dissipation, maturation, and the like ; and were it not that by those two compendia which I have mentioned (elementary qualities, to wit, and specific virtues) they corrupted their correct observations in these other matters,—either reducing them to first qualities and their subtle and incommensurable mixtures, or not following them out with greater and more diligent observation to third and fourth qualities, but breaking off the scrutiny prematurely,—they had made much greater progress. Nor are powers of this kind (I do not say the same, but similar) to be sought for only in the medicines of the human body, but also in the changes of all other bodies.

But it is a far greater evil that they make the quiescent principles, *wherefrom*, and not the moving principles, *whereby*, things are produced, the object of their contemplation and inquiry. For the former tend to discourse, the latter to works. Nor is there any value in those vulgar distinctions of motion which are observed in the received system of natural philosophy, as generation, corruption, augmentation, diminution, alteration, and local motion. What they mean no doubt is this : —If a body, in other respects not changed, be moved from its place, this is *local motion ;* if without change of place or essence, it be changed in quality, this is *alteration ;* if by reason of the change the mass and quantity of the body do not remain the same, this is *augmentation* or *diminution ;* if they be changed to such a degree that they change their very essence and substance and turn to something else, this is *generation* and *corruption*. But all this is merely popular, and does not at all go deep into nature ; for these are only measures and limits, not kinds of motion. What they intimate is *how far*, not *by what means*, or *from what source*. For they do not suggest anything with regard either to the desires of bodies or to the development of their parts : it is only when that motion presents the thing grossly and palpably to the sense as different from what it was, that they begin to mark the division. Even when they wish to suggest something with regard to the causes of motion, and to establish a division with reference to them, they introduce with the greatest negligence a distinction between motion natural and violent ; a distinction which is itself drawn entirely from a vulgar notion, since all violent motion is also in fact natural ; the external efficient simply setting nature working otherwise than it was before. But if, leaving all this, any one shall observe (for instance) that there is in bodies a desire of mutual contact, so as not to suffer the unity of nature to be quite separated or broken and a vacuum thus made ; or if any one say that there is in bodies a desire of resuming their natural dimensions or tension, so that if compressed within or extended beyond them, they immediately strive to recover themselves, and fall back to their old volume and extent ; or if any one say that there is in bodies a desire of congregating towards masses of kindred nature,—of dense bodies, for instance, towards the globe of the earth, of thin and rare bodies towards the compass of the sky ; all these and the like are truly physical kinds of motion ;—but those others are entirely logical and scholastic, as is abundantly manifest from this comparison.

Nor again is it a less evil, that in their philosophies and contemplations their labour is spent in investigating and handling the first principles of things and the highest generalities of nature ; whereas utility and the means of working result entirely from things intermediate. Hence it is that men cease not from abstracting nature till they come to potential and uninformed matter, nor on the other hand from dissecting nature till they reach the atom ; things which, even if true, can do but little for the welfare of mankind.

LXVII.

A caution must also be given to the understanding against the intemperance which systems of philosophy manifest in giving or withholding assent ; because intemperance of this kind seems to establish Idols and in some sort to perpetuate them, leaving no way open to reach and dislodge them.

This excess is of two kinds: the first being manifest in those who are ready in deciding, and render sciences dogmatic and magisterial; the other in those who deny that we can know anything, and so introduce a wandering kind of inquiry that leads to nothing; of which kinds the former subdues, the latter weakens the understanding. For the philosophy of Aristotle, after having by hostile confutations destroyed all the rest (as the Ottomans serve their brothers), has laid down the law on all points; which done, he proceeds himself to raise new questions of his own suggestion, and dispose of them likewise; so that nothing may remain that is not certain and decided: a practice which holds and is in use among his successors.

The school of Plato, on the other hand, introduced *Acatalepsia*, at first in jest and irony, and in disdain of the older sophists, Protagoras, Hippias, and the rest, who were of nothing else so much ashamed as of seeming to doubt about anything [35]. But the new Academy made a dogma of it, and held it as a tenet. And though theirs is a fairer seeming way than arbitrary decisions; since they say that they by no means destroy all investigation, like Pyrrho and his Refrainers, but allow of some things to be followed as probable, though of none to be maintained as true; yet still when the human mind has once despaired of finding truth, its interest in all things grows fainter; and the result is that men turn aside to pleasant disputations and discourses and roam as it were from object to object, rather than keep on a course of severe inquisition. But, as I said at the beginning, and am ever urging, the human senses and understanding, weak as they are, are not to be deprived of their authority, but to be supplied with helps.

LXVIII.

So much concerning the several classes of Idols, and their equipage: all of which must be renounced and put away with a fixed and solemn determination, and the understanding thoroughly freed and cleansed; the entrance into the kingdom of man, founded on the sciences, being not much other than the entrance into the kingdom of heaven, whereinto none may enter except as a little child.

LXIX.

But vicious demonstrations are as the strongholds and defences of Idols; and those we have in logic do little else than make the world the bond-slave of human thought, and human thought the bond-slave of words. Demonstrations truly are in effect the philosophies themselves and the sciences. For such as *they* are, well or ill established, such are the systems of philosophy and the contemplations which follow. Now in the whole of the process which leads from the sense and objects to axioms and conclusions, the demonstrations which we use are deceptive and incompetent. This process consists of four parts, and has as many faults. In the first place, the impressions of the sense itself are faulty; for the sense both fails us and deceives us. But its shortcomings are to be supplied, and its deceptions to be corrected. Secondly, notions are ill drawn from the impressions of the senses, and are indefinite and confused, whereas they should be definite and distinctly bounded. Thirdly, the induction is amiss which infers the principles of sciences by simple enumeration, and does not, as it ought, employ exclusions and solutions (or separations) of nature. Lastly, that method of discovery and proof according to which the most general principles are first established, and then intermediate axioms are tried and proved by them, is the parent of error and the curse of all science. Of these things however, which now I do but touch upon, I will speak more largely when, having performed these expiations and purgings of the mind, I come to set forth the true way for the interpretation of nature.

LXX.

But the best demonstration by far is experience, if it go not beyond the actual experiment. For if it be transferred to other cases which are deemed similar, unless such transfer be made by a just and orderly process, it is a fallacious thing. But the manner of making experiments which men now use is blind and stupid.

[35] See Cicero, *De Nat. Deor.* i. c. 8.

And therefore, wandering and straying as they do with no settled course, and taking counsel only from things as they fall out, they fetch a wide circuit and meet with many matters, but make little progress ; and sometimes are full of hope, sometimes are distracted ; and always find that there is something beyond to be sought. For it generally happens that men make their trials carelessly, and as it were in play ; slightly varying experiments already known, and, if the thing does not answer, growing weary and abandoning the attempt. And even if they apply themselves to experiments more seriously and earnestly and laboriously, still they spend their labour in working out some one experiment, as Gilbert with the magnet, and the chemist with gold ; a course of proceeding not less unskilful in the design than small in the attempt. For no one successfully investigates the nature of a thing in the thing itself ; the inquiry must be enlarged, so as to become more general.

And even when they seek to educe some science or theory from their experiments, they nevertheless almost always turn aside with overhasty and unseasonable eagerness to practice ; not only for the sake of the uses and fruits of the practice, but from impatience to obtain in the shape of some new work an assurance for themselves that it is worth their while to go on ; and also to show themselves off to the world, and so raise the credit of the business in which they are engaged. Thus, like Atalanta, they go aside to pick up the golden apple, but meanwhile they interrupt their course, and let the victory escape them. But in the true course of experience, and in carrying it on to the effecting of new works, the divine wisdom and order must be our pattern. Now God on the first day of creation created light only, giving to that work an entire day, in which no material substance was created. So must we likewise from experience of every kind first endeavour to discover true causes and axioms ; and seek for experiments of Light, not for experiments of Fruit. For axioms rightly discovered and established supply practice with its instruments, not one by one, but in clusters, and draw after them trains and troops of works. Of the paths however of experience, which no less than the paths of judgment are impeded and beset, I will speak hereafter here I have only mentioned ordinary experimental research as a bad kind of demonstration. But now the order of the matter in hand leads me to add something both as to those *signs* which I lately mentioned,—(signs that the systems of philosophy and contemplation in use are in a bad condition)—and also as to the *causes* of what seems at first so strange and incredible. For a knowledge of the signs prepares assent ; an explanation of the causes removes the marvel : which two things will do much to render the extirpation of Idols from the understanding more easy and gentle.

LXXI.

The sciences which we possess come for the most part from the Greeks. For what has been added by Roman, Arabic, or later writers is not much nor of much importance [36] ; and whatever it is, it is built on the foundation of Greek discoveries [37]. Now the wisdom of the Greeks was professorial and much given to disputations ; a kind of wisdom most adverse to the inquisition of truth. Thus that name of Sophists which by those who would be thought philosophers was in contempt cast back upon and so transferred to the ancient rhetoricians, Gorgias, Protagoras, Hippias, Polus, does indeed suit the entire class, Plato, Aristotle, Zeno, Epicurus, Theophrastus, and their successors Chrysippus, Carneades, and the rest. There was this difference only, that the former class was wandering and mercenary, going about from town to town, putting up their wisdom to sale, and taking a price for it; while the latter was more pompous and dignified, as composed of men who had fixed abodes, and who opened schools and taught their

[36] [As Professor Fowler notes, this is unjust as regards the Arabs, whose services to chemistry and to mathematics (as regards algebra) are of real importance.—ED.]

[37] M. Chasles appears to have shown this with respect to the principle of position in arithmetic. We derive it, according to him, not from the Hindoos or Arabs, but from the Greeks. It is remarkable that the Chinese have from the earliest times known how to express any number by means of a few characters.

philosophy without reward. Still both sorts, though in other respects unequal, were professorial; both turned the matter into disputations, and set up and battled for philosophical sects and heresies; so that their doctrines were for the most part (as Dionysius not unaptly rallied Plato) "the talk of idle old men to ignorant youths"[38]. But the elder of the Greek philosophers, Empedocles, Anaxagoras, Leucippus, Democritus, Parmenides, Heraclitus, Xenophanes, Philolaus, and the rest (I omit Pythagoras as a mystic), did not, so far as we know, open schools; but more silently and severely and simply—that is, with less affectation and parade—betook themselves to the inquisition of truth. And therefore they were in my judgment more successful; only that their works were in the course of time obscured by those slighter persons who had more which suits and pleases the capacity and tastes of the vulgar: time, like a river, bringing down to us things which are light and puffed up, but letting weighty matters sink. Still even they were not altogether free from the failing of their nation; but leaned too much to the ambition and vanity of founding a sect and catching popular applause. But the inquisition of truth must be despaired of when it turns aside to trifles of this kind. Nor should we omit that judgment, or rather divination, which was given concerning the Greeks by the Ægyptian priest,—that "they were always boys, without antiquity of knowledge or knowledge of antiquity"[39]. Assuredly they have that which is characteristic of boys; they are prompt to prattle but cannot generate; for their wisdom abounds in words but is barren of works. And therefore the signs which are taken from the origin and birth-place of the received philosophy are not good.

LXXII.

Nor does the character of the time and age yield much better signs than the character of the country and nation. For at that period there was but a narrow and meagre knowledge either of time or place; which is the worst thing that can be, especially for those who rest all on experience. For they had no history, worthy to be called history, that went back a thousand years; but only fables and rumours of antiquity. And of the regions and districts of the world they knew but a small portion; giving indiscriminately the name of Scythians to all in the North, of Celts to all in the West; knowing nothing of Africa beyond the hither side of Æthiopia, of Asia beyond the Ganges; much less were they acquainted with the provinces of the New World, even by hearsay or any well-founded rumour; nay, a multitude of climates and zones, wherein innumerable nations breathe and live, were pronounced by them to be uninhabitable; and the travels of Democritus, Plato, and Pythagoras, which were rather suburban excursions than distant journeys, were talked of as something great. In our times on the other hand both many parts of the New World and the limits on every side of the Old World are known, and our stock of experience has increased to an infinite amount. Wherefore if (like astrologers) we draw signs from the season of their nativity or birth, nothing great can be predicted of those systems of philosophy.

LXXIII.

Of all signs there is none more certain or more noble than that taken from fruits. For fruits and works are as it were sponsors and sureties for the truth of philosophies. Now, from all these systems of the Greeks, and their ramifications through particular sciences, there can hardly after the lapse of so many years be adduced a single experiment which tends to relieve and benefit the condition of man, and which can with truth be referred to the speculations and theories of philosophy. And Celsus ingenuously and wisely owns as much, when he tells us that the experimental part of medicine was first discovered, and that afterward men philosophised about it, and hunted for and assigned causes; and not by an inverse process that philosophy and the knowledge of causes led to the discovery and development of the experimental part[40]. And therefore it was not strange

[38] Diog. Laert. in Platon. c. 18.
[39] Plato, *Timaeus*.
[40] "Repertis deinde medicinæ remediis homines de rationibus eorum disserere cœpisse:

that among the Ægyptians, who rewarded inventors with divine honours and sacred rites, there were more images of brutes than of men ; inasmuch as brutes by their natural instinct have produced many discoveries, whereas men by discussion and the conclusions of reason have given birth to few or none.

Some little has indeed been produced by the industry of chemists ; but it has been produced accidentally and in passing, or else by a kind of variation of experiments, such as mechanics use ; and not by any art or theory, for the theory which they have devised rather confuses the experiments than aids them. They too who have busied themselves with Natural Magic, as they call it, have but few discoveries to show, and those trifling and imposture-like. Wherefore, as in religion we are warned to show our faith by works, so in philosophy by the same rule the system should be judged of by its fruits, and pronounced frivolous if it be barren ; more especially if, in place of fruits of grape and olive, it bear thorns and briars of dispute and contention.

LXXIV.

Signs also are to be drawn from the increase and progress of systems and sciences. For what is founded on nature grows and increases ; while what is founded on opinion varies but increases not. If therefore those doctrines had not plainly been like a plant torn up from its roots, but had remained attached to the womb of nature and continued to draw nourishment from her, that could never have come to pass which we have seen now for twice a thousand years ; namely, that the sciences stand where they did and remain almost in the same condition ; receiving no noticeable increase, but on the contrary, thriving most under their first founder, and then declining. Whereas in the mechanical arts, which are founded on nature and the light of experience, we see the contrary happen, for these (as long as they are popular) are continually thriving and growing, as having in them a breath of life ; at first rude, then convenient, afterwards adorned, and at all times advancing.

LXXV.

There is still another sign remaining (if sign it can be called, when it is rather testimony, nay, of all testimony the most valid) ; I mean the confession of the very authorities whom men now follow. For even they who lay down the law on all things so confidently, do still in their more sober moods fall to complaints of the subtlety of nature, the obscurity of things, and the weakness of the human mind. Now if this were all they did, some perhaps of a timid disposition might be deterred from further search, while others of a more ardent and hopeful spirit might be whetted and incited to go on farther. But not content to speak for themselves, whatever is beyond their own or their master's knowledge or reach they set down as beyond the bounds of possibility, and pronounce, as if on the authority of their art, that it cannot be known or done ; thus most presumptuously and invidiously turning the weakness of their own discoveries into a calumny on nature herself, and the despair of the rest of the world. Hence the school of the New Academy, which held *Acatalepsia* as a tenet and doomed men to perpetual darkness. Hence the opinion that Forms or true differences of things (which are in fact laws of pure act) are past finding out and beyond the reach of man. Hence too those opinions in the department of action and operation ; as that the heat of the sun and of fire are quite different in kind,—lest men should imagine that by the operations of fire anything like the works of nature can be educed and formed. Hence the notion that composition only is the work of man,

nec post rationem medicinam esse inventam, sed post inventam medicinam rationem esse quæsitam."—*Celsus, Præfatio.*

But this remark is not made by Celsus as the expression of his own opinion ; on the contrary it occurs in his statement of the views entertained by the empirical school of medicine, to which he is decidedly opposed. The error of citing Celsus as an authority for it is repeated in several parts of Bacon's works. [See among others *De Augmentis*, v. 2.—*J. S.*]

and mixture of none but nature [41],—lest men should expect from art some power of generating or transforming natural bodies. By this sign, therefore, men will easily take warning not to mix up their fortunes and labours with dogmas not only despaired of but dedicated to despair.

LXXVI.

Neither is this other sign to be omitted ;—that formerly there existed among philosophers such great disagreement, and such diversities in the schools themselves ; a fact which sufficiently shows that the road from the senses to the understanding was not skilfully laid out, when the same groundwork of philosophy (the nature of things to wit) was torn and split up into such vague and multifarious errors. And although in these times disagreements and diversities of opinion on first principles and entire systems are for the most part extinguished, still on parts of philosophy there remain innumerable questions and disputes, so that it plainly appears that neither in the systems themselves nor in the modes of demonstration is there anything certain or sound.

LXXVII.

And as for the general opinion that in the philosophy of Aristotle at any rate there is great agreement ; since after its publication the systems of older philosophers died away, while in the times which followed nothing better was found ; so that it seems to have been so well laid and established as to have drawn both ages in its train ; I answer in the first place, that the common notion of the falling off of the old systems upon the publication of Aristotle's works is a false one ; for long afterwards, down even to the times of Cicero and subsequent ages, the works of the old philosophers still remained. But in the times which followed, when on the inundation of barbarians into the Roman empire human learning had suffered shipwreck, then the systems of Aristotle and Plato, like planks of lighter and less solid material, floated on the waves of time, and were preserved. Upon the point of consent also men are deceived, if the matter be looked into more keenly. For true consent is that which consists in the coincidence of free judgments, after due examination. But far the greater number of those who have assented to the philosophy of Aristotle have addicted themselves thereto from prejudgment and upon the authority of others ; so that it is a following and going along together, rather than consent. But even if it had been a real and widespread consent, still so little ought consent to be deemed a sure and solid confirmation, that it is in fact a strong presumption the other way. For the worst of all auguries is from consent in matters intellectual (divinity excepted, and politics where there is right of vote) [42]. For nothing pleases the many unless it strikes the imagination, or binds the understanding with the bonds of common notions, as I have already said. We may very well transfer therefore from moral to intellectual matters, the saying of Phocion, that if the multitude assent and applaud, men ought immediately to examine themselves as to what blunder or fault they may have committed [43]. This sign therefore is one of the most unfavourable. And so much for this point ; namely, that the signs of truth and soundness in the received systems and sciences are not good ; whether they be drawn from their origin, or from their fruits, or from their progress, or from the confessions of their founders, or from general consent.

LXXVIII.

I now come to the *causes* of these errors, and of so long a continuance in them through so many ages ; which are very many and very potent ;—that all wonder how these considerations which I bring forward should have escaped men's notice

[41] The reference is to Galen, who in his treatise *De Natural. Facultatibus* contrasts the inwardly formative powers of nature with the external operations of art. [Compare Aph. iv., where Bacon advances the very proposition he here disparages.—Ed.]

[42] Bacon does not mean that the votes of a majority are necessarily valid in matters of divinity or politics, but merely that, from the nature of the case, the argument from consent has more weight in these than in purely scientific questions.

[43] [See Plutarch's *Life of Phocion*, c. 8.—Ed.]

till now, may cease ; and the only wonder be, how now at last they should have entered into any man's head and become the subject of his thoughts ; which truly I myself esteem as the result of some happy accident, rather than of any excellence of faculty in me ; a birth of Time rather than a birth of Wit. Now, in the first place, those so many ages, if you weigh the case truly, shrink into a very small compass. For out of the five and twenty centuries over which the memory and learning of men extends, you can hardly pick out six that were fertile in sciences or favourable to their development. In times no less than in regions there are wastes and deserts. For only three revolutions and periods of learning can properly be reckoned ; one among the Greeks, the second among the Romans, and the last among us, that is to say, the nations of Western Europe, and to each of these hardly two centuries can justly be assigned. The intervening ages of the world, in respect of any rich or flourishing growth of the sciences, were unprosperous. For neither the Arabians nor the Schoolmen need be mentioned ; who in the intermediate times rather crushed [44] the sciences with a multitude of treatises, than increased their weight. And therefore the first cause of so meagre a progress in the sciences is duly and orderly referred to the narrow limits of the time that has been favourable to them.

LXXIX.

In the second place there presents itself a cause of great weight in all ways ; namely, that during those very ages in which the wits and learning of men have flourished most, or indeed flourished at all, the least part of their diligence was given to natural philosophy. Yet this very philosophy it is that ought to be esteemed the great mother of the sciences. For all arts and all sciences, if torn from this root, though they may be polished and shaped and made fit for use, yet they will hardly grow. Now it is well known that after the Christian religion was received and grew strong, by far the greater number of the best wits applied themselves to theology : that to this both the highest rewards were offered, and helps of all kinds most abundantly supplied ; and that this devotion to theology chiefly occupied that third portion or epoch of time among us Europeans of the West ; and the more so because about the same time both literature began to flourish and religious controversies to spring up. In the age before, on the other hand, during the continuance of the second period among the Romans, the meditations and labours of philosophers were principally employed and consumed on moral philosophy, which to the Heathen was as theology to us. Moreover in those times the greatest wits applied themselves very generally to public affairs ; the magnitude of the Roman empire requiring the services of a great number of persons. Again, the age in which natural philosophy was seen to flourish most among the Greeks, was but a brief particle of time ; for in early ages the Seven Wise Men, as they were called, (all except Thales) applied themselves to morals and politics ; and in later times, when Socrates had drawn down philosophy from heaven to earth, moral philosophy became more fashionable than ever, and diverted the minds of men from the philosophy of nature.

Nay, the very period itself in which inquiries concerning nature flourished, was by controversies and the ambitious display of new opinions corrupted and made useless. Seeing therefore that during those three periods natural philosophy was in a great degree either neglected or hindered, it is no wonder if men made but small advance in that to which they were not attending.

LXXX.

To this it may be added that natural philosophy, even among those who have attended to it, has scarcely ever possessed, especially in these later times, a disengaged and whole man (unless it were some monk studying in his cell, or some gentleman in his country-house), but that it has been made merely a passage and bridge to something else. And so this great mother of the sciences has with strange indignity been degraded to the offices of a servant ; having to attend on the business of medicine or mathematics, and likewise to wash and imbue youthful

[44] *Contriverunt* : wore them hard, I suppose ; like a path much trodden.—*J. S.*

and unripe wits with a sort of first dye, in order that they may be the fitter to receive another afterwards. Meanwhile let no man look for much progress in the sciences—especially in the practical part of them—unless natural philosophy be carried on and applied to particular sciences, and particular sciences be carried back again to natural philosophy. For want of this, astronomy, optics, music, a number of mechanical arts, medicine, itself—nay, what one might more wonder at, moral and political philosophy, and the logical sciences,—altogether lack profoundness, and merely glide along the surface and variety of things ; because after these particular sciences have been once distributed and established, they are no more nourished by natural philosophy ; which might have drawn out of the true contemplation of motions, rays, sounds, texture and configuration of bodies, affections, and intellectual perceptions, the means of imparting to them fresh strength and growth. And therefore it is nothing strange if the sciences grow not, seeing they are parted from their roots.

LXXXI.

Again there is another great and powerful cause why the sciences have made but little progress ; which is this. It is not possible to run a course aright when the goal itself has not been rightly placed. Now the true and lawful goal of the sciences is none other than this : that human life be endowed with new discoveries and powers. But of this the great majority have no feeling, but are merely hireling and professorial ; except when it occasionally happens that some workman of acuter wit and covetous of honour applies himself to a new invention ; which he mostly does at the expense of his fortunes. But in general, so far are men from proposing to themselves to augment the mass of arts and sciences, that from the mass already at hand they neither take nor look for anything more than what they may turn to use in their lectures, or to gain, or to reputation, or to some similar advantage. And if any one out of all the multitude court science with honest affection and for her own sake, yet even with him the object will be found to be rather the variety of contemplations and doctrines than the severe and rigid search after truth. And if by chance there be one who seeks after truth in earnest, yet even he will propose to himself such a kind of truth as shall yield satisfaction to the mind and understanding in rendering causes for things long since discovered, and not the truth which shall lead to new assurance of works and new light of axioms. If then the end of the sciences has not as yet been well placed, it is not strange that men have erred as to the means.

LXXXII.

And as men have misplaced the end and goal of the sciences ; so again, even if they had placed it right, yet they have chosen a way to it which is altogether erroneous and impassable. And an astonishing thing it is to one who rightly considers the matter, that no mortal should have seriously applied himself to the opening and laying out of a road for the human understanding direct from the sense, by a course of experiment orderly conducted and well built up ; but that all has been left either to the mist of tradition, or the whirl and eddy of argument, or the fluctuations and mazes of chance and of vague and ill-digested experience. Now let any man soberly and diligently consider what the way is by which men have been accustomed to proceed in the investigation and discovery of things ; and in the first place he will no doubt remark a method of discovery very simple and inartificial ; which is the most ordinary method, and is no more than this. When a man addresses himself to discover something, he first seeks out and sees before him all that has been said about it by others ; then he begins to meditate for himself ; and so by much agitation and working of the wit solicits and as it were evokes his own spirit to give him oracles : which method has no foundation at all, but rests only upon opinions and is carried about with them.

Another may perhaps call in logic to discover it for him ; but that has no relation to the matter except in name. For logical invention does not discover principles and chief axioms, of which arts are composed, but only such things as appear to be consistent with them. For if you grow more curious and importunate and busy, and question her of probations and invention of principles

or primary axioms, her answer is well known ; she refers you to the faith you are bound to give to the principles of each separate art.

There remains simple experience ; which, if taken as it comes, is called accident ; if sought for, experiment. But this kind of experience is no better than a broom without its band, as the saying is ;—a mere groping, as of men in the dark, that feel all round them for the chance of finding their way ; when they had much better wait for daylight, or light a candle, and then go. But the true method of experience on the contrary first lights the candle, and then by means of the candle shows the way ; commencing as it does with experience duly ordered and digested, not bungling or erratic, and from it educing axioms, and from established axioms again new experiments ; even as it was not without order and method that the divine word operated on the created mass. Let men therefore cease to wonder that the course of science is not yet wholly run, seeing that they have gone altogether astray ; either leaving and abandoning experience entirely, or losing their way in it and wandering round and round as in a labyrinth ; whereas a method rightly ordered leads by an unbroken route through the woods of experience to the open ground of axioms.

LXXXIII.

This evil however has been strangely increased by an opinion or conceit, which though of long standing is vain and hurtful ; namely, that the dignity of the human mind is impaired by long and close intercourse with experiments and particulars, subject to sense and bound in matter ; especially as they are laborious to search, ignoble to meditate; harsh to deliver, illiberal to practise, infinite in number, and minute in subtlety. So that it has come at length to this, that the true way is not merely deserted, but shut out and stopped up ; experience being, I do not say abandoned or badly managed, but rejected with disdain.

LXXXIV.

Again, men have been kept back as by a kind of enchantment from progress in the sciences by reverence for antiquity, by the authority of men accounted great in philosophy, and then by general consent. Of the last I have spoken above.

As for antiquity, the opinion touching it which men entertain is quite a negligent one, and scarcely consonant with the word itself. For the old age of the world is to be accounted the true antiquity ; and this is the attribute of our own times, not of that earlier age of the world in which the ancients lived ; and which, though in respect of us it was the elder, yet in respect of the world it was the younger[45]. And truly as we look for greater knowledge of human things

[45] This remark is not, I think, given by Bacon as a quotation, and it is probable that he did not derive it from any earlier writer. But in the works of several of the scientific reformers we find similar reflexions. Of writers earlier than Bacon or contemporary with him, we may refer to Gilbert, to Galileo, to the *Apologia pro Galileo* of Campanella, and particularly to the *Cena di Cenere* of Giordano Bruno. The following passage from the last-named writer, in which he appears to have anticipated Bacon, has been referred to by Dr. Whewell in the *Philosophy of the Inductive Sciences*. "Sia come la si vuole," says one of the interlocutors in Bruno's dialogue, "io non voglio discostar mi dal parer degli antichi, perche dice il saggio, Ne l'antiquità è la sapienza." To which another replies : "E soggiunge 'In molti anni la prudenza'. Se voi intendeste bene qualche dite, vedreste che dal vostro fondamento s'inferisce il contrario di quel che pensate. Voglio dire che noi siamo più vecchi ed abbiamo più lunga età, che i nostri predecessori."—*Cena di Cenere*, i. p. 132 of Wagner's edition of G. Bruno.

The idea that the early ages were the world's youth is to be found in the second book of Esdras, or is at any rate directly suggested by an expression which occurs there : "Seculum perdidit juventutem suam, et tempora appropinquant senescere."—*2 Esdras*, xiv. 10. The same idea occurs in Casmann's *Problemata Marina*, which was published in 1546. "Si . . . antiquiorum dignitas ex tempore major videtur, id nostros qui hodie docent posteriores unice commendabit, nam tempus . . . doctius et prudentius evadit ex continuo progressu, ut senescens judicio sit acriore, solidiore, et maturiore." [Note to parallel passage in *De Augmentis*, B. i.]

and a riper judgment in the old man than in the young, because of his experience and of the number and variety of the things which he has seen and heard and thought of; so in like manner from our age, if it but knew its own strength and chose to essay and exert it, much more might fairly be expected than from the ancient times, inasmuch as it is a more advanced age of the world, and stored and stocked with experiments and observations.

Nor must it go for nothing that by the distant voyages and travels which have become frequent in our times, many things in nature have been laid open and discovered which may let in new light upon philosophy. And surely it would be disgraceful if, while the regions of the material globe,—that is, of the earth, of the sea, and of the stars,— have been in our times laid widely open and revealed, the intellectual globe should remain shut up within the narrow limits of old discoveries.

And with regard to authority, it shows a feeble mind to grant so much to authors and yet deny time his rights, who is the author of authors, nay rather of all authority. For rightly is truth called the daughter of time [46], not of authority. It is no wonder therefore if those enchantments of antiquity and authority and consent have so bound up men's powers that they have been made impotent (like persons bewitched) to accompany with the nature of things [47].

LXXXV.

Nor is it only the admiration of antiquity, authority, and consent, that has forced the industry of man to rest satisfied with the discoveries already made; but also an admiration for the works themselves of which the human race has long been in possession. For when a man looks at the variety and the beauty of the provision which the mechanical arts have brought together for men's use, he will certainly be more inclined to admire the wealth of man than to feel his wants: not considering that the original observations and operations of nature (which are the life and moving principle of all that variety) are not many nor deeply fetched, and that the rest is but patience, and the subtle and ruled motion of the hand and instruments;—as the making of clocks (for instance) is certainly a subtle and exact work: their wheels seem to imitate the celestial orbs, and their alternating and orderly motion, the pulse of animals: and yet all this depends on one or two axioms of nature.

Again, if you observe the refinement of the liberal arts, or even that which relates to the mechanical preparation of natural substances; and take notice of such things as the discovery in astronomy of the motions of the heavens, of harmony in music, of the letters of the alphabet (to this day not in use among the Chinese) in grammar: or again in things mechanical, the discovery of the works of Bacchus and Ceres—that is, of the arts of preparing wine and beer, and of making bread; the discovery once more of the delicacies of the table, of distillations and the like; and if you likewise bear in mind the long periods which it has taken to bring these things to their present degree of perfection (for they are all ancient except distillation [48]), and again (as has been said of clocks) how little they owe to observations and axioms of nature, and how easily and obviously and as it were by casual suggestion they may have been discovered; you will easily cease from wondering, and on the contrary will pity the condition of mankind, seeing that in a course of so many ages there has been so great a dearth and barrenness of arts and inventions. And yet these very discoveries which we

[46] [See Aulus Gellius, *Noctes Atticæ*, lib. xii. c. 11.—Ed.]

[47] Compare *Sylv. Sylvar.* § 888.—*J. S.*

[48] It has been said that Porson affirmed that distillation was known to the ancients. Dutens of course maintains that it was; but the passage he quotes from Dioscorides merely refers to sublimation. The word alembic is, as he remarks, a compound of the Arabic article with the Greek word ἄμβιξ, operculum; thus resembling in formation the word "almagest" and some others. But no valid conclusion can be drawn from hence. See Dutens, *Origine des Découvertes*, etc., p. 187 of the London edition. See a very interesting account of the history of distillation in Humboldt's *Examen critique de l'Histoire de la Géographie*, etc., vol. ii. p. 306.

have just mentioned, are older than philosophy and intellectual arts. So that, if the truth must be spoken, when the rational and dogmatical sciences began the discovery of useful works came to an end [49].

And again, if a man turn from the workshop to the library, and wonder at the immense variety of books he sees there, let him but examine and diligently inspect their matter and contents, and his wonder will assuredly be turned the other way; for after observing their endless repetitions, and how men are ever saying and doing what has been said and done before, he will pass from admiration of the variety to astonishment at the poverty and scantiness of the subjects which till now have occupied and possessed the minds of men.

And if again he descend to the consideration of those arts which are deemed curious rather than safe, and look more closely into the works of the Alchemists or the Magicians, he will be in doubt perhaps whether he ought rather to laugh over them or to weep. For the Alchemist nurses eternal hope, and when the thing fails, lays the blame upon some error of his own; fearing either that he has not sufficiently understood the words of his art or of his authors (whereupon he turns to tradition and auricular whispers), or else that in his manipulations he has made some slip of a scruple in weight or a moment in time (whereupon he repeats his trials to infinity); and when meanwhile among the chances of experiment he lights upon some conclusions either in aspect new or for utility not contemptible, he takes these for earnest of what is to come, and feeds his mind upon them, and magnifies them to the most, and supplies the rest in hope. Not but that Alchemists have made a good many discoveries, and presented men with useful inventions. But their case may be well compared to the fable of the old man, who bequeathed to his sons gold buried in a vineyard, pretending not to know the exact spot; whereupon the sons applied themselves diligently to the digging of the vineyard, and though no gold was found there, yet the vintage by that digging was made more plentiful.

Again, the students of natural magic, who explain everything by Sympathies and Antipathies, have in their idle and most slothful conjectures ascribed to substances wonderful virtues and operations; and if ever they have produced works, they have been such as aim rather at admiration and novelty than at utility and fruit.

In superstitious magic on the other hand (if of this also we must speak), it is especially to be observed that they are but subjects of a certain and definite kind wherein the curious and superstitious arts, in all nations and ages, and religions also, have worked or played. These therefore we may pass. Meanwhile it is nowise strange if opinion of plenty has been the cause of want.

LXXXVI.

Further, this admiration of men for knowledges and arts,—an admiration in itself weak enough, and well-nigh childish—has been increased by the craft and artifices of those who have handled and transmitted sciences. For they set them forth with such ambition and parade, and bring them into the view of the world so fashioned and masked, as if they were complete in all parts and finished. For if you look at the method of them and the divisions, they seem to embrace and comprise everything which can belong to the subject. And although these divisions are ill filled out and are but as empty cases, still to the common mind they present the form and plan of a perfect science. But the first and most ancient seekers after truth were wont, with better faith and better fortune too, to throw the knowledge which they gathered from the contemplation of things, and which they meant to store up for use, into aphorisms; that is, into short and scattered sentences, not linked together by an artificial method; and did not pretend or profess to embrace the entire art. But as the matter now is, it is nothing strange if men do not seek to advance in things delivered to them as long since perfect and complete.

[49] Thus we find Aristotle speaks of philosophy as having sprung up after all the wants of life were satisfied. See the beginning of the *Metaphysics*.

LXXXVII.

Moreover the ancient systems have received no slight accession of reputation and credit from the vanity and levity of those who have propounded new ones; especially in the active and practical department of natural philosophy. For there have not been wanting talkers and dreamers who, partly from credulity, partly in imposture, have loaded mankind with promises, offering and announcing the prolongation of life, the retardation of age, the alleviation of pain, the repairing of natural defects, the deceiving of the senses; arts of binding and inciting the affections, of illuminating and exalting the intellectual faculties, of transmuting substances, of strengthening and multiplying motions at will, of making impressions and alterations in the air, of bringing down and procuring celestial influences; arts of divining things future, and bringing things distant near, and revealing things secret; and many more. But with regard to these lavish promisers, this judgment would not be far amiss; that there is as much difference in philosophy between their vanities and true arts, as there is in history between the exploits of Julius Cæsar or Alexander the Great, and the exploits of Amadis of Gaul or Arthur of Britain. For it is true that those illustrious generals really did greater things than these shadowy heroes are even feigned to have done; but they did them by means and ways of action not fabulous or monstrous. Yet surely it is not fair that the credit of true history should be lessened because it has sometimes been injured and wronged by fables. Meanwhile it is not to be wondered at, if a great prejudice is raised against new propositions, especially when works are also mentioned, because of those impostors who have attempted the like; since their excess of vanity, and the disgust it has bred, have their effect still in the destruction of all greatness of mind in enterprises of this kind.

LXXXVIII.

Far more, however, has knowledge suffered from littleness of spirit and the smallness and slightness of the tasks which human industry has proposed to itself. And what is worst of all, this very littleness of spirit comes with a certain air of arrogance and superiority.

For in the first place there is found in all arts one general device, which has now become familiar,—that the author lays the weakness of his art to the charge of nature: whatever his art cannot attain he sets down on the authority of the same art to be in nature impossible. And truly no art can be condemned if it be judge itself. Moreover the philosophy which is now in vogue embraces and cherishes certain tenets, the purpose of which (if it be diligently examined) is to persuade men that nothing difficult, nothing by which nature may be commanded and subdued, can be expected from art or human labour; as with respect to the doctrine that the heat of the sun and of fire differ in kind, and to that other concerning mixture, has been already observed. Which things, if they be noted accurately, tend wholly to the unfair circumscription of human power, and to a deliberate and factitious despair; which not only disturbs the auguries of hope, but also cuts the sinews and spurs of industry, and throws away the chances of experience itself; and all for the sake of having their art thought perfect, and for the miserable vainglory of making it believed that whatever has not yet been discovered and comprehended can never be discovered or comprehended hereafter.

And even if a man apply himself fairly to facts, and endeavour to find out something new, yet he will confine his aim and intention to the investigation and working out of some one discovery and no more; such as the nature of the magnet, the ebb and flow of the sea, the system of the heavens, and things of this kind, which seem to be in some measure secret, and have hitherto been handled without much success. Whereas it is most unskilful to investigate the nature of anything in the thing itself; seeing that the same nature which appears in some things to be latent and hidden is in others manifest and palpable; wherefore in the former it produces wonder, in the latter excites no attention; as we find it in the nature of consistency, which in wood or stone is not observed, but is passed over under the appellation of solidity, without further inquiry as to why separation or

solution of continuity is avoided ; while in the case of bubbles, which form themselves into certain pellicles, curiously shaped into hemispheres, so that the solution of continuity is avoided for a moment, it is thought a subtle matter. In fact what in some things is accounted a secret has in others a manifest and well known nature, which will never be recognized as long as the experiments and thoughts of men are engaged on the former only.

But generally speaking, in mechanics old discoveries pass for new, if a man does but refine or embellish them, or unite several in one, or couple them better with their use, or make the work in greater or less volume than it was before, or the like.

Thus then it is no wonder if noble inventions and worthy of mankind have not been brought to light, when men have been contented and delighted with such trifling and puerile tasks, and have even fancied that in them they have been endeavouring after, if not accomplishing, some great matter.

LXXXIX.

Neither is it to be forgotten that in every age Natural Philosophy has had a troublesome adversary and hard to deal with ; namely, superstition, and the blind and immoderate zeal of religion. For we see among the Greeks that those who first proposed to men's then uninitiated ears the natural causes for thunder and for storms, were thereupon found guilty of impiety [50]. Nor was much more forbearance shown by some of the ancient fathers of the Christian church to those who on most convincing grounds (such as no one in his senses would now think of contradicting) maintained that the earth was round and of consequence asserted the existence of the antipodes [51].

Moreover, as things now are, to discourse of nature is made harder and more perilous by the summaries and systems of the schoolmen ; who having reduced theology into regular order as well as they were able, and fashioned it into the shape of an art, ended in incorporating the contentious and thorny philosophy of Aristotle, more than was fit, with the body of religion [52].

To the same result, though in a different way, tend the speculations of those who have taken upon them to deduce the truth of the Christian religion from the principles of philosophers, and to confirm it by their authority ; pompously solemnising this union of the sense and faith as a lawful marriage, and entertaining men's minds with a pleasing variety of matter, but all the while disparaging things divine by mingling them with things human. Now in such mixtures of theology with philosophy only the received doctrines of philosophy are included ; while new ones, albeit changes for the better, are all but expelled and exterminated.

Lastly, you will find that by the simpleness of certain divines, access to any philosophy, however pure, is well nigh closed. Some are weakly afraid lest a deeper search into nature should transgress the permitted limits of soberminded-ness ; wrongfully wresting and transferring what is said in holy writ against those who pry into sacred mysteries, to the hidden things of nature, which are barred by no prohibition. Others with more subtlety surmise and reflect that if second causes are unknown everything can more readily be referred to the divine hand and rod ; a point in which they think religion greatly concerned ; which is in fact nothing else but to seek to gratify God with a lie. Others fear

[50] [See Aristophanes, *Clouds*, 372–383.—Ed.]

[51] [Cf. Lactantius, *Div. Instit.* iii. 24 ; Augustine, *De civ. Dei*, xvi. 9.—Ed.]

[52] Compare Kepler in the introduction to his great work *De Stellâ Martis* :—" In theologiâ quidem authoritatum, in Philosophiâ vero rationum esse momenta ponderanda. Sanctus igitur Lactantius qui terram negavit esse rotundam : Sanctus Augustinus qui rotunditate concessâ negavit tamen Antipodas : Sanctum Officium hodiernorum qui exilitate terræ concessâ negant tamen ejus motum : at magis mihi sancta Veritas qui terram et rotundam et Antipodibus circumhabitam et contemptissim e parvitatis esse et denique per sidera ferri, salvo Doctorum ecclesiæ respectu, ex philosophiâ demonstro." See for a defence of St. Boniface, touching the story of the Antipodes and Virgilius Bishop of Saltzburg, Fromondus *De Orbe Terræ Immobili*, c. 4.

from past example that movements and changes in philosophy will end in assaults on religion. And others again appear apprehensive that in the investigation of nature something may be found to subvert or at least shake the authority of religion, especially with the unlearned. But these two last fears seem to me to savour utterly of carnal wisdom ; as if men in the recesses and secret thoughts of their hearts doubted and distrusted the strength of religion and the empire of faith over the sense, and therefore feared that the investigation of truth in nature might be dangerous to them. But if the matter be truly considered, natural philosophy is after the word of God at once the surest medicine against superstition, and the most approved nourishment for faith, and therefore she is rightly given to religion as her most faithful handmaid, since the one displays the will of God, the other his power. For he did not err who said " Ye do err, not knowing the Scriptures, nor the power of God," thus coupling and blending in an indissoluble bond information concerning his will and meditation concerning his power. Meanwhile it is not surprising if the growth of Natural Philosophy is checked, when religion, the thing which has most power over men's minds, has by the simpleness and incautious zeal of certain persons been drawn to take part against her.

XC.

Again, in the customs and institutions of schools, academies, colleges, and similiar bodies destined for the abode of learned men and the cultivation of learning, everything is found adverse to the progress of science. For the lectures and exercises there are so ordered, that to think or speculate on anything out of the common way can hardly occur to any man. And if one or two have the boldness to use any liberty of judgment, they must undertake the task all by themselves ; they can have no advantage from the company of others. And if they can endure this also, they will find their industry and largeness of mind no slight hindrance to their fortune. For the studies of men in these places are confined and as it were imprisoned in the writings of certain authors, from whom if any man dissent he is straightway arraigned as a turbulent person and an innovator. But surely there is a great distinction between matters of state and the arts ; for the danger from new motion and from new light is not the same. In matters of state a change even for the better is distrusted, because it unsettles what is established ; these things resting on authority, consent, fame and opinion, not on demonstration. But arts and sciences should be like mines, where the noise of new works and further advances is heard on every side. But though the matter be so according to right reason, it is not so acted on in practice ; and the points above mentioned in the administration and government of learning put a severe restraint upon the advancement of the sciences.

XCI.

Nay, even if that jealousy were to cease, still it is enough to check the growth of science, that efforts and labours in this field go unrewarded. For it does not rest with the same persons to cultivate sciences and to reward them. The growth of them comes from great wits; the prizes and rewards of them are in the hands of the people, or of great persons, who are but in very few cases even moderately learned. Moreover this kind of progress is not only unrewarded with prizes and substantial benefits ; it has not even the advantage of popular applause. For it is a greater matter than the generality of men can take in, and is apt to be overwhelmed and extinguished by the gales of popular opinions. And it is nothing strange if a thing not held in honour does not prosper.

XCII.

But by far the greatest obstacle to the progress of science and to the undertaking of new tasks and provinces therein, is found in this—that men despair and think things impossible. For wise and serious men are wont in these matters to be altogether distrustful ; considering with themselves the obscurity of nature, the shortness of life, the deceitfulness of the senses, the weakness of the judgment, the difficulty of experiment and the like ; and so supposing that in the

revolution of time and of the ages of the world the sciences have their ebbs and flows; that at one season they grow and flourish, at another wither and decay, yet in such sort that when they have reached a certain point and condition they can advance no further. If therefore any one believes or promises more, they think this comes of an ungoverned and unripened mind, and that such attempts have prosperous beginnings, become difficult as they go on, and end in confusion. Now since these are thoughts which naturally present themselves to grave men and of great judgment, we must take good heed that we be not led away by our love for a most fair and excellent object to relax or diminish the severity of our judgment; we must observe diligently what encouragement dawns upon us and from what quarter; and, putting aside the lighter breezes of hope, we must thoroughly sift and examine those which promise greater steadiness and constancy. Nay, and we must take state-prudence too into our counsels, whose rule is to distrust, and to take the less favourable view of human affairs. I am now therefore to speak touching Hope; especially as I am not a dealer in promises, and wish neither to force nor to ensnare men's judgments, but to lead them by the hand with their good will. And though the strongest means of inspiring hope will be to bring men to particulars; especially to particulars digested and arranged in my Tables of Discovery (the subject partly of the second but much more of the fourth part of my Instauration), since this is not merely the promise of the thing but the thing itself; nevertheless that everything may be done with gentleness, I will proceed with my plan of preparing men's minds; of which preparation to give hope is no unimportant part. For without it the rest tends rather to make men sad (by giving them a worse and a meaner opinion of things as they are than they now have, and making them more fully to feel and know the unhappiness of their own condition) than to induce any alacrity or to whet their industry in making trial. And therefore it is fit that I publish and set forth those conjectures of mine which make hope in this matter reasonable; just as Columbus did, before that wonderful voyage of his across the Atlantic, when he gave the reasons for his conviction that new lands and continents might be discovered besides those which were known before; which reasons, though rejected at first, were afterwards made good by experience, and were the causes and beginnings of great events.

XCIII.

The beginning is from God [53]: for the business which is in hand, having the character of good so strongly impressed upon it, appears manifestly to proceed from God, who is the author of good, and the Father of Lights. Now in divine operations even the smallest beginnings lead of a certainty to their end. And as it was said of spiritual things, "The kingdom of God cometh not with observation," so is it in all the greater works of Divine Providence; everything glides on smoothly and noiselessly, and the work is fairly going on before men are aware that it has begun. Nor should the prophecy of Daniel be forgotten, touching the last stages of the world:—"Many shall go to and fro, and knowledge shall be increased"; clearly intimating that the thorough passage of the world (which now by so many distant voyages seems to be accomplished, or in course of accomplishment), and the advancement of the sciences, are destined by fate, that is, by Divine Providence, to meet in the same age.

XCIV.

Next comes a consideration of the greatest importance as an argument of hope; I mean that drawn from the errors of past time, and of the ways hitherto trodden. For most excellent was the censure once passed upon a government that had been unwisely administered. "That which is the worst thing in reference to the past, ought to be regarded as best for the future. For if you had done all that your duty demanded, and yet your affairs were no better, you would not have even a hope left you that further improvement is possible. But now, when your misfortunes are owing, not to the force of circumstances, but to your own errors, you may hope that by dismissing or correcting these errors, a great change may

[53] Ἐκ Διὸς ἀρχώμεσθα—Aratus, *Phenom.* i. 1.

be made for the better " [54]. In like manner, if during so long a course of years men had kept the true road for discovering and cultivating sciences, and had yet been unable to make further progress therein, bold doubtless and rash would be the opinion that farther progress is possible. But if the road itself has been mistaken, and men's labour spent on unfit objects, it follows that the difficulty has its rise not in things themselves, which are not in our power, but in the human understanding, and the use and application thereof, which admits of remedy and medicine. It will be of great use therefore to set forth what these errors are; for as many impediments as there have been in times past from this cause, so many arguments are there of hope for the time to come. And although they have been partly touched before, I think fit here also, in plain and simple words, to represent them.

XCV.

Those who have handled sciences have been either men of experiment or men of dogmas. The men of experiment are like the ant; they only collect and use; the reasoners resemble spiders, who make cobwebs out of their own substance [55]. But the bee takes a middle course; it gathers its material from the flowers of the garden and of the field, but transforms and digests it by a power of its own. Not unlike this is the true business of philosophy; for it neither relies solely or chiefly on the powers of the mind, nor does it take the matter which it gathers from natural history and mechanical experiments and lay it up in the memory whole, as it finds it; but lays it up in the understanding altered and digested. Therefore from a closer and purer league between these two faculties, the experimental and the rational, (such as has never yet been made) much may be hoped.

XCVI.

We have as yet no natural philosophy that is pure; all is tainted and corrupted; in Aristotle's school by logic; in Plato's by natural theology; in the second school of Platonists, such as Proclus and others, by mathematics, which sought only to give definiteness to natural philosophy, not to generate or give it birth. From a natural philosophy pure and unmixed, better things are to be expected.

XCVII.

No one has yet been found so firm of mind and purpose as resolutely to compel himself to sweep away all theories and common notions, and to apply the understanding, thus made fair and even, to a fresh examination of particulars. Thus it happens that human knowledge, as we have it, is a mere medley and ill-digested mass, made up of much credulity and much accident, and also of the childish notions which we at first imbibed.

Now if any one of ripe age, unimpaired senses, and well-purged mind, apply himself anew to experience and particulars, better hopes may be entertained of that man. In which point I promise to myself a like fortune to that of Alexander the great; and let no man tax me with vanity till he have heard the end; for the thing which I mean tends to the putting off of all vanity. For of Alexander and his deeds Æschines spake thus: " Assuredly we do not live the life of mortal men; but to this end were we born, that in after ages wonders might be told of us "; as if what Alexander had done seemed to him miraculous [56]. But in the next age Titus Livius took a better and a deeper view of the matter, saying in effect, that Alexander " had done no more than take courage to despise vain apprehensions " [57]. And a like judgment I suppose may be passed on myself in future ages: that I did no great things, but simply made less account of things that were accounted great. In the meanwhile, as I have already said, there is no hope except in a new birth of science; that is, in raising it regularly up from experience and building it afresh; which no one (I think) will say has yet been done or thought of.

[54] Demosthenes: see the first Philippic, p. 40, and the third, p. 112. Ed. Reisk.
[55] Stobæus, *Florileg.* § 82. Compare *De Augmentis*, v. 2.
[56] Æschines, *De Corona*, p. 72. Ed. H. Stephen. [57] Lib. ix. c. 17.

XCVIII.

Now for grounds of experience—since to experience we must come—we have as yet had either none or very weak ones ; no search has been made to collect a store of particular observations sufficient either in number, or in kind, or in certainty, to inform the understanding, or in any way adequate. On the contrary, men of learning, but easy withal and idle, have taken for the construction or for the confirmation of their philosophy certain rumours and vague fames or airs of experience, and allowed to these the weight of lawful evidence. And just as if some kingdom or state were to direct its counsels and affairs, not by letters and reports from ambassadors and trustworthy messengers, but by the gossip of the streets ; such exactly is the system of management introduced into philosophy with relation to experience. Nothing duly investigated, nothing verified, nothing counted, weighed, or measured, is to be found in natural history : and what in observation is loose and vague, is in information deceptive and treacherous. And if any one thinks that this is a strange thing to say, and something like an unjust complaint, seeing that Aristotle, himself so great a man, and supported by the wealth of so great a king, has composed so accurate a history of animals ; and that others with greater diligence, though less pretence, have made many additions ; while others, again, have compiled copious histories and descriptions of metals, plants, and fossils ; it seems that he does not rightly apprehend what it is that we are now about. For a natural history which is composed for its own sake is not like one that is collected to supply the understanding with information for the building up of philosophy. They differ in many ways, but especially in this ; that the former contains the variety of natural species only, and not experiments of the mechanical arts. For even as in the business of life a man's disposition and the secret workings of his mind and affections are better discovered when he is in trouble than at other times ; so likewise the secrets of nature reveal themselves more readily under the vexations of art than when they go their own way. Good hopes may therefore be conceived of natural philosophy, when natural history, which is the basis and foundation of it, has been drawn up on a better plan ; but not till then.

XCIX.

Again, even in the great plenty of mechanical experiments, there is yet a greater scarcity of those which are of most use for the information of the understanding. For the mechanic, not troubling himself with the investigation of truth, confines his attention to those things which bear upon his particular work, and will not either raise his mind or stretch out his hand for anything else. But then only will there be good ground of hope for the further advance of knowledge, when there shall be received and gathered together into natural history a variety of experiments, which are of no use in themselves, but simply serve to discover causes and axioms ; which I call "*Experimenta lucifera*", experiments of *light*, to distinguish them from those which I call "*fructifera*", experiments of *fruit*.

Now experiments of this kind have one admirable property and condition ; they never miss or fail. For since they are applied, not for the purpose of producing any particular effect, but only of discovering the natural cause of some effect, they answer the end equally well whichever way they turn out ; for they settle the question.

C.

But not only is a greater abundance of experiments to be sought for and procured, and that too of a different kind from those hitherto tried ; an entirely different method, order, and process for carrying on and advancing experience must also be introduced. For experience, when it wanders in its own track, is, as I have already remarked, mere groping in the dark, and confounds men rather than instructs them. But when it shall proceed in accordance with a fixed law, in regular order, and without interruption, then may better things be hoped of knowledge.

CI.

But even after such a store of natural history and experience as is required for the work of the understanding, or of philosophy, shall be ready at hand, still the understanding is by no means competent to deal with it offhand and by memory alone; no more than if a man should hope by force of memory to retain and make himself master of the computation of an ephemeris. And yet hitherto more has been done in matter of invention by thinking than by writing; and experience has not yet learned her letters. Now no course of invention can be satisfactory unless it be carried on in writing. But when this is brought into use, and experience has been taught to read and write, better things may be hoped.

CII.

Moreover, since there is so great a number and army of particulars, and that army so scattered and dispersed as to distract and confound the understanding, little is to be hoped for from the skirmishings and slight attacks and desultory movements of the intellect, unless all the particulars which pertain to the subject of inquiry shall, by means of Tables of Discovery, apt, well arranged, and as it were animate, be drawn up and marshalled; and the mind be set to work upon the helps duly prepared and digested which these tables supply.

CIII.

But after this store of particulars has been set out duly and in order before our eyes, we are not to pass at once to the investigation and discovery of new particulars or works; or at any rate if we do so we must not stop there. For although I do not deny that when all the experiments of all the arts shall have been collected and digested, and brought within one man's knowledge and judgment, the mere transferring of the experiments of one art to others may lead, by means of that experience which I term *literate*, to the discovery of many new things of service to the life and state of man, yet it is no great matter that can be hoped from that; but from the new light of axioms, which having been educed from those particulars by a certain method and rule, shall in their turn point out the way again to new particulars, greater things may be looked for. For our road does not lie on a level, but ascends and descends; first ascending to axioms, then descending to works.

CIV.

The understanding must not however be allowed to jump and fly from particulars to remote axioms and of almost the highest generality (such as the first principles, as they are called, of arts and things), and taking stand upon them as truths that cannot be shaken, proceed to prove and frame the middle axioms by reference to them; which has been the practice hitherto; the understanding being not only carried that way by a natural impulse, but also by the use of syllogistic demonstration trained and inured to it. But then, and then only, may we hope well of the sciences, when in a just scale of ascent, and by successive steps not interrupted or broken, we rise from particulars to lesser axioms; and then to middle axioms, one above the other; and last of all to the most general. For the lowest axioms differ but slightly from bare experience, while the highest and most general (which we now have) are notional and abstract and without solidity. But the middle are the true and solid and living axioms, on which depend the affairs and fortunes of men; and above them again, last of all those which are indeed the most general; such I mean as are not abstract, but of which those intermediate axioms are really limitations [58].

The understanding must not therefore be supplied with wings, but rather hung with weights, to keep it from leaping and flying. Now this has never yet been done; when it is done, we may entertain better hopes of the sciences.

CV.

In establishing axioms, another form of induction must be devised than has hitherto been employed; and it must be used for proving and discovering not

[58] *i.e.* particular cases.

first principles (as they are called) only, but also the lesser axioms, and the middle, and indeed all. For the induction which proceeds by simple enumeration is childish; its conclusions are precarious, and exposed to peril from a contradictory instance; and it generally decides on too small a number of facts, and on those only which are at hand. But the induction which is to be available for the discovery and demonstration of sciences and arts, must analyse nature by proper rejections and exclusions; and then, after a sufficient number of negatives, come to a conclusion on the affirmative instances; which has not yet been done or even attempted, save only by Plato, who does indeed employ this form of induction to a certain extent for the purpose of discussing definitions and ideas [59]. But in order to furnish this induction or demonstration well and duly for its work, very many things are to be provided which no mortal has yet thought of; insomuch that greater labour will have to be spent in it than has hitherto been spent on the syllogism. And this induction must be used not only to discover axioms, but also in the formation of notions. And it is in this induction that our chief hope lies.

CVI.

But in establishing axioms by this kind of induction, we must also examine and try whether the axiom so established be framed to the measure of those particulars only from which it is derived, or whether it be larger and wider. And if it be larger and wider, we must observe whether by indicating to us new particulars it confirm that wideness and largeness as by a collateral security; that we may not either stick fast in things already known, or loosely grasp at shadows and abstract forms; not at things solid and realised in matter. And when this process shall have come into use, then at last shall we see the dawn of a solid hope.

CVII.

And here also should be remembered what was said above concerning the extending of the range of natural philosophy to take in the particular sciences, and the referring or bringing back of the particular sciences to natural philosophy; that the branches of knowledge may not be severed and cut off from the stem. For without this the hope of progress will not be so good.

CVIII.

So much then for the removing of despair and the raising of hope through the dismissal or rectification of the errors of past time. We must now see what else there is to ground hope upon. And this consideration occurs at once—that if many useful discoveries have been made by accident or upon occasion, when men were not seeking for them but were busy about other things; no one can doubt but that when they apply themselves to seek and make this their business, and that too by method and in order and not by desultory impulses, they will discover far more. For although it may happen once or twice that a man shall stumble on a thing by accident which, when taking great pains to search for it, he could not find; yet upon the whole it unquestionably falls out the other way. And therefore far better things, and more of them, and at shorter intervals, are to be expected from man's reason and industry and direction and fixed application than from accident and animal instinct and the like, in which inventions have hitherto had their origin.

CIX.

Another argument of hope may be drawn from this,—that some of the inventions already known are such as before they were discovered it could hardly have entered any man's head to think of; they would have been simply set aside as impossible. For in conjecturing what may be men set before them the example

[59] This is one of many passages which show that Bacon was very far from asserting that he was the first to propose an inductive method. It is remarkable that M. de St. Hilaire in his translation of the treatise *De Animâ* of Aristotle has repeated the popular assertion that Bacon claimed to be the first discoverer of induction.