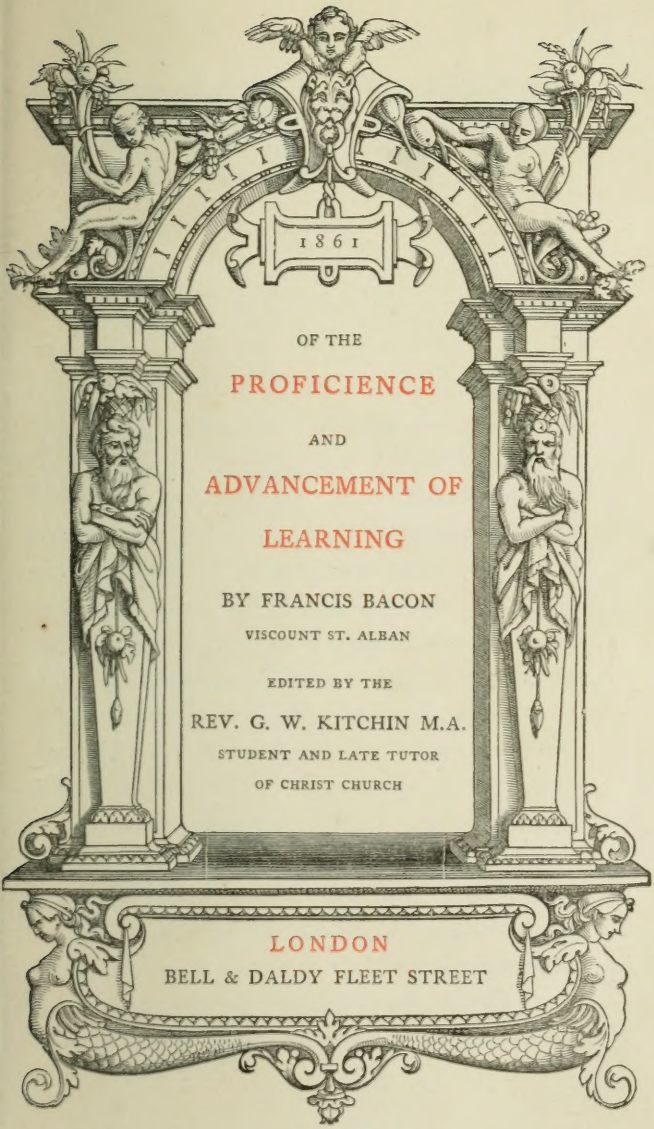

OF THE

PROFICIENCE

AND

ADVANCEMENT OF LEARNING

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THE SECOND BOOK OF FRANCIS BACON:

Of the Proficience and Advancement of Learning Divine and Human.

To the King.

IT might ſeem to have more convenience, though it come often otherwiſe to paſs, excellent King, that thoſe, which are fruitful in their generations, and have in themſelves the foreſight of immortality in their deſcendants, ſhould likewiſe be more careful of the good eſtate of future times, unto which they know they muſt tranſmit and commend over their deareſt pledges. Queen Elizabeth was a ſojourner in the world in reſpect of her unmarried life, and was a bleſſing to her own times; and yet ſo as the impreſſion of her good government, beſides her happy memory, is not without ſome effect which doth ſurvive her. But to your Majeſty, whom God hath already bleſſed with ſo much royal iſſue, worthy to continue and

De Aug. ii. præf. The Advancement of Learning commended to the care of Kings and others.

repreſent you for ever, and whoſe youthful and fruitful bed doth yet promiſe many of the like renovations; it is proper and agreeable to be converſant not only in the tranſitory parts of good government, but in thoſe acts alſo which are in their nature permanent and perpetual: amongſt the which, if affection do not tranſport me, there is not any more worthy than the further endowment of the world with ſound and fruitful knowledge. For why ſhould a few received authors ſtand up like Hercules' columns,[1] beyond which there ſhould be no ſailing or diſcovering, ſince we have ſo bright and benign a ſtar as your Majeſty to conduct and proſper us? To return therefore where we left, it remaineth to conſider of what kind thoſe acts are which have been undertaken and performed by kings and others for the increaſe and advancement of learning: wherein I purpoſe to ſpeak actively without digreſſing or dilating.

Three chief means of help: (1.) Rewards; (2.) Guidance; (3.) Combination.

Let this ground therefore be laid, that all works are overcome by amplitude of reward, by ſoundneſs of direction, and by the conjunction of labours. The firſt multiplieth endeavour, the ſecond preventeth error, and the third ſupplieth the frailty of man: but the principal of theſe is direction: for *Claudus in via antevertit curſorem extra viam;* and Salomon excellently ſetteth it down, *If the iron be not ſharp, it requireth more ſtrength; but wiſdom is that which prevaileth;*[2] ſignifying that

[1] A favourite thought of Bacon's, and expreſſed afterwards on the engraved title-page of the firſt edition of the *Novum Organum*, A.D. 1620.

[2] Eccl. x. 10.

the invention or election of the mean is more effectual than any inforcement or accumulation of endeavours. This I am induced to ſpeak, for that (not derogating from the noble intention of any that have been deſervers towards the ſtate of learning) I do obſerve, neverthelefs, that their works and acts are rather matters of magnificence and memory, than of progreſſion and proficience; and tend rather to augment the maſs of learning in the multitude of learned men, than to rectify or raiſe the ſciences themſelves.

Three objects to be helped: (1.) Places of learning; (2.) Books; (3.) Learned perſons.

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

(1.) Places of learning, how helped.

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

> Principio ſedes apibus ſtatioque petenda,
> Quo neque ſit ventis aditus, &c.[3]

(2.) Books, how beſt cared for.

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

(3.) The learned, how helped.

The works pertaining to the perſons of learned men, beſides the advancement and countenancing of them in general, are two: the reward and deſignation of readers in ſciences already extant and invented; and the reward and deſignation of writers and inquirers concerning any parts of learning not ſufficiently laboured and proſecuted.

Theſe are ſummarily the works and acts, wherein the merits of many excellent princes and other worthy perſonages have been converſant. As for any particular commemorations, I call to mind what Cicero ſaid, when he gave general thanks; *Difficile non aliquem, ingratum quenquam*

[3] Virg. *Georg.* iv. 8.

præterire.[4] Let us rather, according to the Scriptures,[5] look unto that part of the race which is before us than look back to that which is already attained.

Seats of learning faulty, (1) as being dedicated to particular profeſſions.

Firſt, therefore, amongſt ſo many great foundations of colleges in Europe, I find it ſtrange that they are all dedicated to profeſſions, and none left free to arts and ſciences at large. For if men judge that learning ſhould be referred to action, they judge well; but in this they fall into the error deſcribed in the ancient fable,[6] in which the other parts of the body did ſuppoſe the ſtomach had been idle, becauſe it neither performed the office of motion, as the limbs do, nor of ſenſe, as the head doth; but yet, notwithſtanding, it is the ſtomach that digeſteth and diſtributeth to all the reſt: ſo if any man think philoſophy and univerſality to be idle ſtudies, he doth not conſider that all profeſſions are from thence ſerved and ſupplied. And this I take to be a great cauſe that hath hindered the progreſſion of learning, becauſe theſe fundamental knowledges have been ſtudied but in paſſage. For if you will have a tree bear more fruit than it hath uſed to do, it is not anything you can do to the boughs, but it is the ſtirring of the earth and putting new mould about the roots that muſt work it. Neither is it to be forgotten, that this dedicating of foundations and dotations to pro-

[4] *Orat. poſt Redit. in Sen.* xii. 30, which in Bacon's day was counted genuine. The actual paſſage is ſomething ſtronger; for it has *nefas* inſtead of *ingratum*.

[5] Philip. iii. 13.

[6] Liv. ii. 32.

feſſory learning hath not only had a malign aſpect and influence upon the growth of ſciences, but hath alſo been prejudicial to ſtates and governments. For hence it proceedeth that princes find a ſolitude in regard of able men to ſerve them in cauſes of ſtate, becauſe there is no education collegiate which is free; where ſuch as were ſo diſpoſed might give themſelves to hiſtories, modern languages, books of policy and civil diſcourſe, and other the like enablements unto ſervice of eſtate.

(2) As ill provided with public lectures.

And becauſe Founders of Colleges do plant, and Founders of Lectures do water, it followeth well in order to ſpeak of the defect which is in public lectures; namely, in the ſmallneſs and meanneſs of the ſalary or reward which in moſt places is aſſigned unto them; whether they be lectures of arts, or of profeſſions. For it is neceſſary to the progreſſion of ſciences that Readers be of the moſt able and ſufficient men; as thoſe which are ordained for generating and propagating of ſciences, and not for tranſitory uſe. This cannot be, except their condition and endowment be ſuch as may content the ableſt man to appropriate his whole labour and continue his whole age in that function and attendance; and therefore muſt have a proportion anſwerable to that mediocrity or competency of advancement, which may be expected from a profeſſion or the practice of a profeſſion. So as, if you will have ſciences flouriſh, you muſt obſerve David's military law, which was, *That thoſe which ſtaid with the carriage ſhould have*

equal part with thoſe which were in the action;[7] elſe will the carriages be ill attended. So Readers in ſciences are indeed the guardians of the ſtores and proviſions of ſciences, whence men in active courſes are furniſhed, and therefore ought to have equal entertainment with them: otherwiſe if the fathers in ſciences be of the weakeſt ſort, or be ill-maintained,

Et patrum invalidi referent jejunia nati.[8]

(3) As to means for inquiry into Nature.

Another defect I note, wherein I ſhall need ſome alchemiſt to help me, who call upon men to ſell their books, and to build furnaces; quitting and forſaking Minerva and the Muſes as barren virgins, and relying upon Vulcan.[9] But certain it is, that unto the deep, fruitful, and operative ſtudy of many ſciences, eſpecially Natural Philoſophy and Phyſic, books be not the only inſtrumentals; wherein alſo the beneficence of men hath not been altogether wanting: for we ſee ſpheres, globes, aſtrolabes, maps, and the like, have been provided as appurtenances to aſtronomy and coſmography, as well as books: we ſee likewiſe that ſome places inſtituted for phyſic have annexed the commodity of gardens for ſimples of all ſorts, and do likewiſe command the uſe of dead bodies for anatomies. But theſe do reſpect but a few things. In general, there will hardly be any main proficience in the diſcloſing of nature, except there be ſome

[7] 1 Sam. xxx. 22.

[8] Virg. *Georg.* iii. 128.

[9] See *Nov. Org.* ii. 7: "Tranſeundum plane a Vulcano ad Minervam, ſi in animo ſit veras corporum texturas et ſchematiſmos . . . . in lucem protrahere."

allowance for expenſes about experiments; whether they be experiments appertaining to Vulcanus or Dædalus, furnace or engine, or any other kind: and therefore as ſecretaries and ſpials of princes and ſtates bring in bills for intelligence, ſo you muſt allow the ſpials and intelligencers of nature to bring in their bills; or elſe you ſhall be ill advertiſed.

And if Alexander made ſuch a liberal aſſignation to Ariſtotle of treaſure[10] for the allowance of hunters, fowlers, fiſhers, and the like, that he might compile a Hiſtory of Nature, much better do they deſerve it that travail in Arts of Nature.[11]

(4) As to the careleſſneſs of Viſitors.

Another defect which I note, is an intermiſſion or neglect in thoſe which are governors in univerſities, of conſultation; and in princes or ſuperior perſons, of viſitation: to enter into account and conſideration, whether the readings, exerciſes, and other cuſtoms appertaining unto learning, anciently begun, and ſince continued, be well inſtituted or no; and thereupon to ground an amendment or reformation in that which ſhall be found inconvenient. For it is one of your majeſty's own moſt wiſe and princely maxims, *That in all*

[10] Ælian, *Var. Hiſt.* iv. 19, ſays that Philip helped him, and Athenæus, ix. 398. f. ſtates the amount ſaid to have been allowed him by Alexander, 800 talents. But Bacon takes his ſtatement here from Plin. *Nat. Hiſt.* viii. 17.

[11] The Latin has for "travail in arts of Nature," "*in labyrinthis artium viam ſibi aperiunt*,"—where Art is oppoſed to Nature. So that the phraſe "Arts of Nature" muſt be modified to mean "Arts concerned with Nature." Or, poſſibly, there is ſome miſtake in the reading. All the old editions have *travailes*. If the reading is correct, the ſenſe will be that they who lay down rules and general principles of Arts in things Natural are worthy of higher reward than are they who only collect Hiſtories, *i. e.* catalogues or regiſters of detached facts.

uſages and precedents, the times be conſidered wherein they firſt began; which, if they were weak or ignorant, it derogateth from the authority of the uſage, and leaveth it for ſuſpect. And therefore inaſmuch as moſt of the uſages and orders of the univerſities were derived from more obſcure times, it is the more requiſite they be re-examined. In this kind I will give an inſtance or two, for example ſake, of things that are the moſt obvious and familiar. The one is a matter, which though it be ancient and general, yet I hold to be an error; which is, that ſcholars in univerſities come too ſoon and too unripe to logic and rhetoric, arts fitter for graduates than children and novices: for theſe two, rightly taken, are the graveſt of ſciences, being the arts of arts; the one for judgment, the other for ornament: and they be the rules and directions how to ſet forth and diſpoſe matter; and therefore for minds empty and unfraught with matter, and which have not gathered that which Cicero calleth *Sylva* and *Supellex*,[12] ſtuff and variety, to begin with thoſe arts, (as if one ſhould learn to weigh, or to meaſure, or to paint the wind), doth work but this effect, that the wiſdom of thoſe arts, which is great and univerſal, is almoſt made contemptible, and is degenerate into childiſh ſophiſtry and ridiculous affectation. And further, the untimely learning of them hath drawn on, by conſequence, the ſuperficial and unprofitable teaching and writing of them, as fitteth indeed to the capacity of children. Another is a lack I

[12] *Sylva*, de Orat. iii. 26. (103.) *Supellex*, Orat. 24. (80.)

find in the exercises used in the Universities, which do make too great a divorce between invention and memory; for their speeches are either premeditate, *In verbis conceptis*, where nothing is left to invention, or merely extemporal, where little is left to memory: whereas in life and action there is least use of either of these, but rather of intermixtures of premeditation and invention, notes and memory; so as the exercise fitteth not the practice, nor the image the life; and it is ever a true rule in exercises, that they be framed as near as may be to the life of practice; for otherwise they do pervert the motions and faculties of the mind, and not prepare them. The truth whereof is not obscure, when scholars come to the practices of professions, or other actions of civil life; which when they set into, this want is soon found by themselves, and sooner by others. But this part, touching the amendment of the institutions and orders of Universities, I will conclude with the clause of Cæsar's letter to Oppius and Balbus, *Hoc quemadmodum fieri possit, nonnulla mihi in mentem veniunt, et multa reperiri possunt; de iis rebus rogo vos ut cogitationem suscipiatis.*[13]

(5) As to intercourse between Universities.

Another defect which I note, ascendeth a little higher than the precedent: for as the proficience of learning consisteth much in the orders and institutions of Universities in the same states and kingdoms, so it would be yet more advanced, if there were more intelligence mutual between the Universities of Europe than now there is.

[13] Cic. *ad Att.* ix. 7. c.

We ſee there may be many orders and foundations, which though they be divided under ſeveral ſovereignties and territories, yet they take themſelves to have a kind of contract, fraternity, and correſpondence one with the other; inſomuch as they have provincials and generals. And ſurely, as nature createth brotherhood in families, and arts mechanical contract brotherhoods in commonalties, and the anointment of God ſuperinduceth a brotherhood in kings and biſhops; ſo in like manner there cannot but be a fraternity in learning and illumination, relating to that paternity which is attributed to God, who is called the Father of illuminations or lights.[14]

(6) No perſons appointed to inquire into deficient branches of learning.

The laſt defect which I will note is, that there hath not been, or very rarely been, any public deſignation of writers or inquirers concerning ſuch parts of knowledge as may appear not to have been already ſufficiently laboured or undertaken; unto which point it is an inducement to enter into a view and examination what parts of learning have been proſecuted, and what omitted: for the opinion of plenty is among the cauſes of want, and the great quantity of books maketh a ſhow rather of ſuperfluity than lack; which ſurcharge, nevertheleſs, is not to be remedied by making no more books, but by making more good books, which, as the ſerpent of Moſes, might devour the ſerpents of the enchanters.[15]

The removing of all the defects formerly enu- The removal of

[14] James i. 17.

[15] Exod. vii. 10. It was *Aaron's* rod that became a ſerpent.

these defects the work of kings, except part of the last, *i. e.* the survey of learning, which I will now attempt.

merated, except the last, and of the active part also of the last, (which is the designation of writers,) are *opera basilica;* towards which the endeavours of a private man may be but as an image in a crossway, that may point at the way, but cannot go it: but the inducing part of the latter, which is the survey of learning, may be set forward by private travail. Wherefore I will now attempt to make a general and faithful perambulation of learning, with an inquiry what parts thereof lie fresh and waste, and not improved and converted by the industry of man; to the end that such a plot made and recorded to memory, may both minister light to any public designation, and also serve to excite voluntary endeavours: wherein, nevertheless, my purpose is at this time to note only omissions and deficiencies, and not to make any redargution of errors or incomplete prosecutions; for it is one thing to set forth what ground lieth unmanured, and another thing to correct ill husbandry in that which is manured.

In the handling and undertaking of which work I am not ignorant what it is that I do now move and attempt, nor insensible of mine own weakness to sustain my purpose; but my hope is, that if my extreme love to learning carry me too far, I may obtain the excuse of affection; for that *It is not granted to man to love and to be wise.*[16] But I know well I can use no other liberty of judgment than I must leave to others; and I for my part shall be indifferently glad either to perform myself, or accept

[16] Publ. Syr. *Sentent.* 166: Amare et sapere vix Deo conceditur.

from another, that duty of humanity; *Nam qui erranti comiter monſtrat viam, &c.*[17] I do foreſee likewiſe that of thoſe things which I ſhall enter and regiſter as deficiencies and omiſſions, many will conceive and cenſure that ſome of them are already done and extant; others to be but curioſities, and things of no great uſe; and others to be of too great difficulty, and almoſt impoſſibility to be compaſſed and effected. But for the two firſt, I refer myſelf to the particulars; for the laſt, touching impoſſibility, I take it thoſe things are to be held poſſible which may be done by ſome perſon, though not by every one; and which may be done by many, though not by any one; and which may be done in the ſucceſſion of ages, though not within the hourglaſs of one man's life; and which may be done by public deſignation, though not by private endeavour. But, notwithſtanding, if any man will take to himſelf rather that of Salomon, *Dicit piger, Leo eſt in via*,[18] than that of Virgil, *Poſſunt quia poſſe videntur*,[19] I ſhall be content that my labours be eſteemed but as the better ſort of wiſhes: for as it aſketh ſome knowledge to demand a queſtion not impertinent, ſo it required ſome ſenſe to make a wiſh not abſurd.

THE *parts* of human learning have reference to the three parts of man's underſtanding, which is the ſeat of learning: *hiſtory* to his *memory*, *poeſy*

De Aug. II. i. Human Learning is triple, according to the three parts of the mind.

[17] Ennius, quoted by Cic. *de Off.* i. 16. (5.)
[18] Prov. xxii. 13.
[19] Virg. *Æn.* v. 231.

(1.) History to Memory. (2.) Poesy to Imagination. (3.) Philosophy to Reason.

to his *imagination*, and *philosophy* to his *reason*. Divine learning receiveth the same distribution; for the spirit of man is the same, though the revelation of oracle and sense be diverse: so as theology consisteth also of the *history* of the church; of *parables*, which is divine *poesy;* and of holy *doctrine* or *precept:* for as for that part which seemeth supernumerary, which is *prophecy*, it is but Divine History; which hath that prerogative over human, as the narration may be before the fact as well as after.

De Aug. II. 4. I. History. (1.) Natural. (2.) Civil. (3.) Ecclesiastical. (4.) Literary.

History is *natural*, *civil*, *ecclesiastical*, and *literary;* whereof the first three I allow as extant, the fourth I note as deficient. For no man hath propounded to himself the general state of learning to be described and represented from age to age, as many have done the works of nature, and the state civil and ecclesiastical; without which the history of the world seemeth to me to be as the statua of Polyphemus with his eye out; that part being wanting which doth most show the spirit and life of the person: and yet I am not ignorant that in divers particular sciences, as of the jurisconsults, the mathematicians, the rhetoricians, the philosophers, there are set down some small memorials of the schools, authors, and books; and so likewise some barren relations touching the invention of arts or usages. But a just story of learning, containing the antiquities and originals of knowledges and their sects, their inventions, their traditions, their diverse administrations and managings, their flourishings, their oppositions, decays, depressions, oblivions, removes, with the causes and occa-

sions of them, and all other events concerning learning, throughout the ages of the world, I may truly affirm to be wanting. The use and end of which work I do not so much design for curiosity or satisfaction of those that are the lovers of learning, but chiefly for a more serious and grave purpose; which is this in few words, that it will make learned men wise in the use and administration of learning. For it is not St. Augustine's nor St. Ambrose's works that will make so wise a divine, as ecclesiastical history, thoroughly read and observed; and the same reason is of learning.

History of nature is of three sorts; of *nature* in *course*, of *nature erring* or *varying*, and of *nature altered* or wrought; that is, *history of creatures*, *history of marvels*, and *history of arts*. The first of these, no doubt, is extant, and that in good perfection; the two latter are handled so weakly and unprofitably, as I am moved to note them as deficient. For I find no sufficient or competent collection of the works of nature which have a digression and deflection from the ordinary course of generations, productions, and motions; whether they be singularities of place and region, or the strange events of time and chance, or the effects of yet unknown properties, or the instances of exception to general kinds. It is true, I find a number of books of fabulous experiments and secrets, and frivolous impostures for pleasure and strangeness; but a substantial and severe collection of the *heteroclites* or *irregulars* of *nature*,[20] well

De Aug. II. 2. (1.) Natural. (*a*) Of creatures.

[20] Cf. *Nov. Org.* i. 45, and ii. 28. These "instances of ex-

examined and described, I find not: especially not with due rejection of fables and popular errors: for as things now are, if an untruth in nature be once on foot, what by reason of the neglect of examination and countenance of antiquity, and what by reason of the use of the opinion in similitudes and ornaments of speech, it is never called down.

(*b*) Of Marvels.

The use of this work, honoured with a precedent in Aristole,[21] is nothing less than to give contentment to the appetite of curious and vain wits, as the manner of Mirabilaries[22] is to do; but for two reasons, both of great weight; the one to correct the partiality of axioms and opinions, which are commonly framed only upon common and familiar examples; the other because from the wonders of nature is the nearest intelligence and passage towards the wonders of art: for it is no more but by following, and as it were hounding nature in her wanderings, to be able to lead her afterwards to the same place again. Neither am I of opinion, in this history of marvels, that superstitious narrations of sorceries, witchcrafts, dreams, divinations, and the like, where there is an assurance and clear evidence of the fact, be altogether excluded. For it is not yet known in what cases and how far effects attributed to superstition do participate of natural causes: and therefore howsoever the practice of such things is to be condemned, yet from the speculation and consideration

ception to general kinds" he there terms *inplantiæ monodicæ*, quas etiam *irregulares* sive *heteroclitas* appellare consuevimus.

[21] *De Mirris Auscultationibus*; (θαυμάσια ἀκούσματα), see p. 30.

[22] *Mirabilaries*. In *De Augm. Sc.* ii. he calls them "Mirabilarii et prodigiastri."

of them light may be taken, not only for the diſcerning of the offences, but for the further diſcloſing of nature. Neither ought a man to make ſcruple of entering into theſe things for inquiſition of truth, as your Majeſty hath ſhowed in your own example; who with the two clear eyes of religion and natural philoſophy have looked deeply and wiſely into theſe ſhadows, and yet proved yourſelf to be of the nature of the ſun, which paſſeth through pollutions, and itſelf remains as pure as before.[23] But this I hold fit, that theſe narrations, which have mixture with ſuperſtition, be ſorted by themſelves, and not be mingled with the narrations which are merely and ſincerely natural. But as for the narrations touching the prodigies and miracles of religions, they are either not true, or not natural; and therefore impertinent for the ſtory of nature.

For *hiſtory of nature wrought* or *mechanical*, I find ſome collections made of agriculture, and likewiſe of manual arts; but commonly with a rejection of experiments familiar and vulgar. For it is eſteemed a kind of diſhonour unto learning to deſcend to inquiry or meditation upon matters mechanical, except they be ſuch as may be thought ſecrets, rarities, and ſpecial ſubtilties; which humour of vain and ſupercilious arrogancy is juſtly derided in Plato; where he brings in Hippias, a vaunting ſophiſt, diſputing with Socrates, a true and unfeigned inquiſitor of truth; where the ſubject being touching beauty, Socrates, after his (c) Of Arts.

[23] Cf. *Nov. Org.* i. 120. This thought is to be met with in Chaucer, *Perſone's Tale*: "Certes, Holy Writ may not be defouled, no more than the ſonne that ſhineth on the myxene."

wandering manner of inductions, put first an example of a fair virgin, and then of a fair horse, and then of a fair pot well glazed, whereat Hippias was offended, and said, *More than for courtesy's sake, he did think much to dispute with any that did allege such base and sordid instances:* whereunto Socrates answered, *You have reason, and it becomes you well, being a man so trim in your vestments, &c.* and so goeth on in an irony.[24] But the truth is, they be not the highest instances that give the surest information; as may be well expressed in the tale so common of the philosopher,[25] that while he gazed upwards to the stars fell into the water; for if he had looked down he might have seen the stars in the water, but looking aloft he could not see the water in the stars. So it cometh often to pass, that mean and small things discover great, better than great can discover the small: and therefore Aristotle noteth well, *That the nature of everything is best seen in its smallest portions.* And for that cause he inquireth the nature of a commonwealth, first in a family, and the simple conjugations of man and wife, parent and child, master and servant, which are in every cottage.[26] Even so likewise the nature of this great city of the world, and the policy thereof, must be first sought in mean concordances and small portions. So we see how that secret of nature, of the turning of iron touched with the loadstone towards the north, was found out in needles of iron, not in bars of iron.

[24] Plato, *Hipp. Maj.* iii. 288 and 291.
[25] Thales. See Plat. *Theæt.* i. 174.
[26] Aristot. *Polit.* I. iii. 1, and *Phys.* i.

But if my judgment be of any weight, the uſe of *hiſtory mechanical* is of all others the moſt radical and fundamental towards natural philoſophy; ſuch natural philoſophy as ſhall not vaniſh in the fume of ſubtile, ſublime, or delectable ſpeculation, but ſuch as ſhall be operative to the endowment and benefit of man's life: for it will not only miniſter and ſuggeſt for the preſent many ingenious practices in all trades, by a connection and transferring of the obſervations of one art to the uſe of another, when the experiences of ſeveral myſteries ſhall fall under the conſideration of one man's mind; but further, it will give a more true and real illumination concerning cauſes and axioms than is hitherto attained. For like as a man's diſpoſition is never well known till he be croſſed, nor Proteus ever changed ſhapes till he was ſtraitened and held faſt;[27] ſo the paſſages and variations of nature cannot appear ſo fully in the liberty of nature, as in the trials and vexations of art.

For *civil hiſtory*, it is of three kinds; not unfitly to be compared with the three kinds of pictures or images: for of pictures or images, we ſee ſome are unfiniſhed, ſome are perfect, and ſome are defaced. So of hiſtories we may find three kinds, *memorials*, *perfect hiſtories*, and *antiquities*; for *memorials* are hiſtory unfiniſhed, or the firſt or rough draughts of hiſtory; and *antiquities* are hiſtory defaced, or ſome remnants of hiſtory which have caſually eſcaped the ſhipwreck of time.

De Aug. II. 6. (2.) Of Civil Hiſtory.

[27] Virg. *Georg.* iv. 387, ſqq.

(*a*) Memorials.

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

(*b*) Antiquities.

Antiquities, or remnants of hiſtory, are, as was ſaid, *Tanquam tabula naufragii*;[28] when induſtrious perſons by an exact and ſcrupulous diligence and obſervation, out of monuments, names, words, proverbs, traditions, private records and evidences, fragments of ſtories, paſſages of books that concern not ſtory,[29] and the like, do ſave and recover ſomewhat from the deluge of time.

In theſe kinds of unperfect hiſtories I do aſſign no deficience, for they are *Tanquam imperfecte miſta*; and therefore any deficience in them is but their nature. As for the corruptions and moths of hiſtory, which are *epitomes*, the uſe of them deſerveth to be baniſhed, as all men of ſound judgment have confeſſed; as thoſe that have fretted

[28] "As was ſaid;" referring to the laſt page. Cf. *Nov. Org.* i. 77.

[29] *Story* here = hiſtory: "librorum neutiquam hiſtoricorum."

and corroded the ſound bodies of many excellent hiſtories, and wrought them into baſe and unprofitable dregs.[30]

Hiſtory, which may be called *juſt* and *perfect* hiſtory, is of three kinds, according to the object which it propoundeth or pretendeth to repreſent: for it either repreſenteth a *time*, or a *perſon*, or an *action*. The firſt we call *chronicles*, the ſecond *lives*, and the third *narrations* or *relations*. Of theſe, although the firſt be the moſt complete and abſolute kind of hiſtory, and hath moſt eſtimation and glory, yet the ſecond excelleth it in profit and uſe, and the third in verity and ſincerity. For hiſtory of *times* repreſenteth the magnitude of actions, and the public faces and deportments of perſons, and paſſeth over in ſilence the ſmaller paſſages and motions of men and matters. But ſuch being the workmanſhip of God, as He doth hang the greateſt weight upon the ſmalleſt wires, *Maxima è minimis ſuſpendens*,[31] it comes therefore to paſs, that ſuch hiſtories do rather ſet forth the pomp of buſineſs than the true and inward reſorts thereof. But *lives*, if they be well written, propounding to themſelves a perſon to repreſent in whom actions both greater and ſmaller, public and private, have a commixture, muſt of neceſſity contain a more true, native, and lively repreſentation. So again *narrations* and relations of actions, as the war of Peloponneſus, the expedition of Cyrus Minor, the conſpiracy of Catiline, cannot but be

De Aug. II. 7. (*c.*) Perfect Hiſtory.

i. Chronicles.

[30] As in the Epitomes written in the decline of Latin Literature.

[31] Job xxvi. 7. "Qui appendit terram ſuper nihilum."

more purely and exactly true than hiſtories of times, becauſe they may chooſe an argument comprehenſible within the notice and inſtructions of the writer: whereas he that undertaketh the ſtory of a time, eſpecially of any length, cannot but meet with many blanks and ſpaces which he muſt be forced to fill up out of his own wit and conjecture.

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

a. Ancient. Now to ſpeak of the deficiencies. As to the *heathen antiquities* of the world, it is in vain to note them for deficient: deficient they are no doubt, conſiſting moſt of fables and fragments; but the deficience cannot be holpen; for antiquity is like fame, *Caput inter nubila condit*,[31] her head is muffled from our ſight. For the hiſtory of the *exemplar ſtates*, it is extant in good perfection. Not but I could wiſh there were a perfect courſe of hiſtory for Græcia from Theſeus to Philopœmen, (what time the affairs of Græcia were drowned and extinguiſhed in the affairs of Rome;) and for Rome from Romulus to Juſtinianus, who may be truly

[31] Virg. *Æn.* iv. 177.

ſaid to be *Ultimus Romanorum.*[32] In which ſequences of ſtory the text of Thucydides and Xenophon in the one, and the texts of Livius, Polybius, Salluſtius, Cæſar, Appianus, Tacitus, Herodianus in the other, to be kept entire without any diminution at all, and only to be ſupplied and continued. But this is matter of magnificence, rather to be commended than required: and we ſpeak now of parts of learning ſupplemental and not of ſupererogation.

But for *modern hiſtories*, whereof there are ſome few very worthy, but the greater part beneath mediocrity, (leaving the care of foreign ſtories to foreign ſtates, becauſe I will not be *curioſus in aliena republica*,[33]) I cannot fail to repreſent to your Majeſty the unworthineſs of the hiſtory of England in the main continuance thereof, and the partiality and obliquity of that of Scotland in the lateſt and largeſt author that I have ſeen:[34] ſuppoſing that it would be honour for your Majeſty, and a work very memorable, if this iſland of Great Britain, as it is now joined in monarchy for the ages to come, ſo were joined in one hiſtory for the times paſſed; after the manner of the Sacred Hiſtory, which draweth down the ſtory of the ten tribes and of the two tribes, as twins, together. And if it ſhall ſeem that the greatneſs of this work may make it leſs exactly performed, there is an excellent period

β. Modern.

[32] Said of Caſſius, Tac. *Ann.* iv. 34. "Cremutius Cordus poſtulatur, . . . quod C. Caſſium *Romanorum ultimum* dixiſſet." Cf. Plut. *Brutus*, 43. Suet. *Tib.* 61. who attributes it to both Brutus and Caſſius.

[33] Cic. *Off.* i. 34.

[34] Buchanan, for whom King James had no love.

of a much ſmaller compaſs of time, as to the ſtory of England; that is to ſay, from the uniting of the Roſes to the uniting of the kingdoms; a portion of time, wherein, to my underſtanding, there hath been the rareſt varieties that in like number of ſucceſſions of any hereditary monarchy hath been known. For it beginneth with the mixed adoption of a crown by arms and title: an entry by battle, an eſtabliſhment by marriage, and therefore times anſwerable, like waters after a tempeſt, full of working and ſwelling, though without extremity of ſtorm; but well paſſed through by the wiſdom of the pilot, being one of the moſt ſufficient kings of all the number. Then followeth the reign of a king, whoſe actions, howſoever conducted, had much intermixture with the affairs of Europe, balancing and inclining them variably; in whoſe time alſo began that great alteration in the ſtate eccleſiaſtical, an action which ſeldom cometh upon the ſtage. Then the reign of a minor: then an offer of a uſurpation, though it was but as *febris ephemera*. Then the reign of a queen matched with a foreigner: then of a queen that lived ſolitary and unmarried, and yet her government ſo maſculine, that it had greater impreſſion and operation upon the ſtates abroad than it any ways received from thence. And now laſt, this moſt happy and glorious event, that this iſland of Britain, divided from all the world,[35] ſhould be united in itſelf: and that oracle of reſt, given to Æneas, *antiquam exquirite ma-*

[35] Virg. *Ecl.* i. 67.

trem,[36] ſhould now be performed and fulfilled upon the nations of England and Scotland, being now reunited in the ancient mother name of Britain, as a full period of all inſtability and peregrinations. So that as it cometh to paſs in maſſive bodies, that they have certain trepidations and waverings before they fix and ſettle; ſo it ſeemeth that by the providence of God this monarchy, before it was to ſettle in your majeſty and your generations, (in which I hope it is now eſtabliſhed for ever,) had theſe preluſive changes and varieties.

For *lives*, I do find it ſtrange that theſe times have ſo little eſteemed the virtues of the times, as that the writing of lives ſhould be no more frequent. For although there be not many ſovereign princes or abſolute commanders, and that ſtates are moſt collected into monarchies, yet are there many worthy perſonages that deſerve better than diſperſed report or barren elogies. For herein the invention of one of the late poets[37] is proper, and doth well enrich the ancient fiction: for he feigneth that at the end of the thread or web of every man's life there was a little medal containing the perſon's name, and that Time waited upon the ſhears; and as ſoon as the thread was cut, caught the medals, and carried them to the river of Lethe; and about the bank there were many birds flying up and down, that would get the medals and carry

ii. Lives.

[36] Virg. *Æn.* iii. 96.

[37] Arioſto, *Orlando Furioſo*, end of Bk. 34, and opening of Bk. 35. (See Ellis' and Spedding's Ed. of the De Augm. Sc.)

them in their beak a little while, and then let them fall into the river: only there were a few ſwans, which if they got a name, would carry it to a temple where it was conſecrate. And although many men, more mortal in their affections than in their bodies, do eſteem deſire of name and memory but as a vanity and ventoſity,

Animi nil magnæ laudis egentes;[38]

which opinion cometh from that root, *Non prius laudes contempſimus, quam laudanda facere deſivimus:*[39] yet that will not alter Salomon's judgment, *Memoria juſti cum laudibus, at impiorum nomen putreſcet:*[40] the one flouriſheth, the other either conſumeth to preſent oblivion, or turneth to an ill odour. And therefore in that ſtyle or addition, which is and hath been long well received and brought in uſe, *Felicis memoriæ, piæ memoriæ, bonæ memoriæ*, we do acknowledge that which Cicero ſaith, borrowing it from Demoſthenes, that *Bona fama propria poſſeſſio defunctorum;*[41] which poſſeſſion I cannot but note that in our times it lieth much waſte, and that therein there is a deficience.

iii. Narrations.

For *narrations* and *relations* of particular actions, there were alſo to be wiſhed a greater diligence therein; for there is no great action but hath ſome good pen which attends it. And becauſe it is an

[38] Virg. *Æn.* v. 751.

[39] Plin. *Ep.* iii. 21. "Poſtquam deſiimus facere laudanda, laudari quoque ineptum putamus." Were Bacon's quotations uſually from memory?

[40] Prov. x. 7.

[41] Cic. *Philip.* ix. "Vita enim mortuorum in memoria vivorum eſt poſita." From Dem. *adv. Lept.* 488. *ἵν' ἦν ζῶντες ἐκτήσαντο εὐδοξίαν αὕτη καὶ τελευτηκόσιν αὐτοῖς ἀποθεῖη.*

ability not common to write a good hiſtory, as may well appear by the ſmall number of them; yet if particularity of actions memorable were but tolerably reported as they paſs, the compiling of a complete hiſtory of times mought be the better expected, when a writer ſhould ariſe that were fit for it: for the collection of ſuch relations mought be as a nurſery garden, whereby to plant a fair and ſtately garden, when time ſhould ſerve.

There is yet another portion of hiſtory which Cornelius Tacitus maketh, which is not to be forgotten, eſpecially with that application which he accoupleth it withal, *annals* and *journals*: appropriating to the former matters of eſtate, and to the latter acts and accidents of a meaner nature. For giving but a touch of certain magnificent buildings, he addeth, *Cum ex dignitate populi Romani repertum ſit, res illuſtres annalibus talia diurnis urbis actis mandare.*[42] So as there is a kind of contemplative heraldry, as well as civil. And as nothing doth derogate from the dignity of a ſtate more than confuſion of degrees; ſo it doth not a little embaſe the authority of a hiſtory, to intermingle matters of triumph, or matters of ceremony, or matters of novelty, with matters of ſtate. But the uſe of a *journal* hath not only been in the hiſtory of time, but likewiſe in the hiſtory of perſons, and chiefly of actions; for princes in ancient time had, upon point of honour and policy both, journals kept of what paſſed day by day: for we ſee the chronicle which was read before

De Aug. II. 9. iv. Annals.

[42] Tac. *Ann.* xiii. 31.

Ahaſuerus,[43] when he could not take reſt, contained matter of affairs indeed, but ſuch as had paſſed in his own time, and very lately before: but the journal of Alexander's houſe expreſſed every ſmall particularity, even concerning his perſon and court;[44] and it is yet a uſe well received in enterpriſes memorable, as expeditions of war, navigations, and the like, to keep *diaries* of that which paſſeth continually.

De Aug. ii. 10. Eſſays on hiſtory come under Policy.

I cannot likewiſe be ignorant of a form of writing which ſome wiſe and grave men have uſed, containing a ſcattered hiſtory of thoſe actions which they have thought worthy of memory, with politic diſcourſe and obſervation thereupon: not incorporate into the hiſtory, but ſeparately, and as the more principal in their intention;[45] which kind of *ruminated hiſtory* I think more fit to place amongſt books of policy, whereof we ſhall hereafter ſpeak, than amongſt books of hiſtory: for it is the true office of hiſtory to repreſent the events themſelves together with the counſels, and to leave the obſervations and concluſions thereupon to the liberty and faculty of every man's judgment. But mixtures are things irregular, whereof no man can define.

v. Coſmography or travels and mathematics on their phyſical ſide.

So alſo is there another kind of hiſtory manifoldly mixed, and that is *hiſtory of coſmography:* being compounded of natural hiſtory, in reſpect of the regions themſelves; of hiſtory civil, in reſpect

[43] Eſth. vi. 1.

[44] See Plutarch, *Sympos.* i. Qu. 6.

[45] Such books as Machiavelli's *Diſcorſi ſopra Livia* are here meant.

of the habitations, regiments, and manners of the people; and the *mathematics*, in respect of the climates and configurations towards the heavens: which part of learning of all others in this latter time hath obtained most proficience. For it may be truly affirmed to the honour of these times, and in a virtuous emulation with antiquity, that this great building of the world had never through-lights made in it, till the age of us and our fathers: for although they had knowledge of the Antipodes,

> Nosque ubi primus equis Oriens afflavit anhelis,
> Illic sera rubens accendit lumina Vesper:[46]

yet that mought be by demonstration, and not in fact; and if by travel, it requireth the voyage but of half the globe. But to circle the earth, as the heavenly bodies do, was not done or enterprised till these latter times: and therefore these times may justly bear in their word, not only *plus ultra*,[47] in precedence of the ancient *non ultra*, and *imitabile fulmen*, in precedence of the ancient *non imitabile fulmen*,

> Demens qui nimbos et non imitabile fulmen; &c.[48]

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

And this proficience in navigation and discoveries may plant also an expectation of the further proficience and augmentation of all sciences;

[46] Virg. *Georg.* i. 250, 251.
[47] *Plus ultra* was the motto of Charles V. (Ellis.)
[48] Virg. *Æn.* vi. 590.

becauſe it may ſeem they are ordained by God to be coevals, that is, to meet in one age. For ſo the prophet Daniel, ſpeaking of the latter times, foretelleth *Plurimi pertranſibunt, et multiplex erit ſcientia*:[49] as if the openneſs and thorough paſſage of the world and the increaſe of knowledge were appointed to be in the ſame ages; as we ſee it is already performed in great part; the learning of theſe latter times not much giving place to the former two periods or returns of learning, the one of the Grecians, the other of the Romans.

De Aug. II. 11. (3.) Eccleſiaſtical Hiſtory.

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

(*a.*) Of the Church.

(*b.*) Of Prophecy.

The ſecond, which is *hiſtory of prophecy*, conſiſteth of two relatives, the prophecy, and the accompliſhment; and therefore the nature of ſuch a work ought to be, that every prophecy of the Scripture be ſorted with the event fulfilling the ſame, throughout the ages of the world; both for

[49] Dan. xii. 4.

better confirmation of faith, and for the better illumination of the Church touching thoſe parts of prophecies which are yet unfulfilled: allowing nevertheleſs that latitude which is agreeable and familiar unto divine prophecies; being of the nature of their Author, with whom a thouſand years are but as one day;[50] and therefore are not fulfilled punctually at once, but have ſpringing and germinant accompliſhment throughout many ages; though the height or fulneſs of them may refer to ſome one age. This is a work which I find deficient; but is to be done with wiſdom, ſobriety, and reverence, or not at all.

The third, which is *hiſtory of providence*, containeth that excellent correſpondence which is between God's revealed will and His ſecret will: which though it be ſo obſcure, as for the moſt part it is not legible to the natural man; no, nor many times to thoſe that behold it from the Tabernacle; yet at ſome times it pleaſeth God, for our better eſtabliſhment and the confuting of thoſe which are as without God in the world, to write it in ſuch text and capital letters, that as the prophet ſaith, *He that runneth by may read it*;[51] that is, mere ſenſual perſons, which haſten by God's judgments, and never bend or fix their cogitations upon them, are nevertheleſs in their paſſage and race urged to diſcern it. Such are the notable events and examples of God's judgments, chaſ- (*c.*) Of Providence.

[50] 2 Peter iii. 8.

[51] Hab. ii. 2. but miſquoted. "That he may run that readeth," —*i. e.* may haſten to carry on the tidings.

tiſements, deliverances, and bleſſings: and this is a work which hath paſſed through the labour of many, and therefore I cannot preſent as omitted.

De Aug. II. 2. (4.) There are alſo Appendices to Hiſtory; or Literary Hiſtory.

There are alſo other parts of learning which are *appendices to hiſtory:* for all the exterior proceedings of man conſiſt of words and deeds: whereof hiſtory doth properly receive and retain in memory the deeds: and if words, yet but as inducements and paſſages to deeds: ſo are there other books and writings, which are appropriate to the cuſtody and receipt of words only; which likewiſe are of three ſorts: *orations*, *letters*, and *brief ſpeeches* or *ſayings*. Orations are pleadings, ſpeeches of counſel, laudatives, invectives, apologies, reprehenſions, orations of formality or ceremony, and the like. Letters are according to all the variety of occaſions, advertiſements, advices, directions, propoſitions, petitions, commendatory, expoſtulatory, ſatisfactory, of compliment, of pleaſure, of diſcourſe, and all other paſſages of action. And ſuch as are written from wiſe men, are of all the words of man, in my judgment, the beſt; for they are more natural than orations and public ſpeeches, and more adviſed than conferences or preſent ſpeeches. So again letters of affairs from ſuch as manage them, or are privy to them, are of all others the beſt inſtructions for hiſtory, and to a diligent reader the beſt hiſtories in themſelves. For Apophthegms, it is a great loſs of that book of Cæſar's;[52] for as his hiſtory, and thoſe few letters of his which we have, and thoſe apophthegms

[52] Vid. Cic. *ad Fam.* ix. 16.

which were of his own, excel all men's elſe, ſo I ſuppoſe would his collection of Apophthegms have done; for as for thoſe which are collected by others, either I have no taſte in ſuch matters, or elſe their choice hath not been happy. But upon theſe three kinds of writings I do not inſiſt, becauſe I have no deficiencies to propound concerning them.

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

Poeſy is a part of learning in meaſure of words for the moſt part reſtrained, but in all other points extremely licenſed, and doth truly refer to the imagination; which, being not tied to the laws of matter, may at pleaſure join that which nature hath ſevered, and ſever that which nature hath joined; and ſo make unlawful matches and divorces of things; *Pictoribus atque poetis*, &c.[53] It is taken in two ſenſes in reſpect of words or matter; in the firſt ſenſe it is but a *character* of ſtyle, and belongeth to arts of ſpeech, and is not pertinent for the preſent: in the latter it is, as hath been ſaid, one of the principal portions of learning, and is nothing elſe but *feigned hiſtory*, which may be ſtyled as well in proſe as in verſe. De Aug. II. 13. II. Poetry.

The uſe of this *feigned hiſtory* hath been to give ſome ſhadow of ſatisfaction to the mind of man in thoſe points wherein the nature of things doth deny it, the world being in proportion inferior to

[53] Hor. *Ep. ad Pis.* 9.

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

The diviſion of Poeſy which is apteſt in the propriety thereof, (beſides thoſe diviſions which are common unto it with hiſtory, as feigned chronicles, feigned lives, and the appendices of hiſtory,

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

But there remaineth yet another uſe of Poeſy Parabolical, oppoſite to that which we laſt mentioned: for that tendeth to demonſtrate and illuſtrate that which is taught or delivered, and this other to retire and obſcure it: that is, when the ſecrets and myſteries of religion, policy, or philoſophy, are involved in fables or parables. Of this in divine poeſy we ſee the uſe is authorized. In

heathen poesy we see the exposition of fables doth fall out sometimes with great felicity; as in the fable that the giants being overthrown in their war against the gods, the Earth their mother in revenge thereof brought forth Fame:

> Illam terra parens, irâ irritata Deorum,
> Extremam, ut perhibent, Cœo Enceladoque sororem
> Progenuit:[54]

expounded, that when princes and monarchs have suppressed actual and open rebels, then the malignity of the people, which is the mother of rebellion, doth bring forth libels and slanders, and taxations of the states, which is of the same kind with rebellion, but more feminine. So in the fable, that the rest of the gods having conspired to bind Jupiter, Pallas[55] called Briareus with his hundred hands to his aid: expounded, that monarchies need not fear any curbing of their absoluteness by mighty subjects, as long as by wisdom they keep the hearts of the people, who will be sure to come in on their side. So in the fable, that Achilles was brought up under Chiron the Centaur, who was part a man and part a beast, expounded ingeniously but corruptly by Machiavel,[56] that it belongeth to the education and discipline of princes to know as well how to play the part of the lion in violence, and the fox in guile, as of the man in virtue and justice. Nevertheless, in many the like encounters, I do rather think that the fable was first, and the exposition devised, than that the moral was

[54] Virg. *Æn.* iv. 178-180.
[55] Not Pallas, but Thetis, Hom. *Il.* A. 401, *sqq.*
[56] Hom. *Il.* A. 831, and Machiav. *Prince*, c. 18.

firſt, and thereupon the fable framed. For I find it was an ancient vanity in Chryſippus, that troubled himſelf with great contention to faſten the aſſertions of the Stoics upon the fictions of the ancient poets; but yet that all the fables and fictions of the poets were but pleaſure and not figure, I interpoſe no opinion. Surely of thoſe poets which are now extant, even Homer himſelf (notwithſtanding he was made a kind of Scripture by the latter ſchools of the Grecians,) yet I ſhould without any difficulty pronounce that his fables had no ſuch inwardneſs in his own meaning; but what they might have upon a more original tradition, is not eaſy to affirm; for he was not the inventor of many of them.[57]

In this third[58] part of learning, which is poeſy, I can report no deficience. For being as a plant that cometh of the luſt of the earth, without a formal ſeed, it hath ſprung up and ſpread abroad more than any other kind. But to aſcribe unto it that which is due, for the expreſſing of affections, paſſions, corruptions, and cuſtoms, we are beholding to poets more than to the philoſophers' works; and for wit and eloquence, not much leſs than to orators' harangues. But it is not good to ſtay too long in the theatre. Let us now paſs on to the judicial place or palace of the mind, which we are to approach and view with more reverence and attention.

[57] In the Latin, in room of theſe examples, the fables of Pan, Perſeus, and Dionyſus, are expounded to ſhow reſpectively how phyſical, political, and moral doctrines might be thence deduced.

[58] Rather the *ſecond* than the *third* part of learning—Hiſtory, Poeſy, Philoſophy.

De Aug. III. 1.
III. Philosophy. [Divinity being reserved to the last.]

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

Which is, (1.) Divine; (2.) Natural; (3.) Human.

In *Philosophy*, the contemplations of man do either penetrate unto God,—or are circumferred to nature,—or are reflected or reverted upon himself. Out of which several inquiries there do arise three knowledges, *divine philosophy*, *natural philosophy*, and *human philosophy* or *humanity*. For all things are marked and stamped with this triple character, of the power of God, the difference of nature, and the use of man. But because the distributions and partitions of knowledge are not like several lines that meet in one angle, and so touch but in a point; but are like branches of a tree, that meet in a stem, which hath a dimension and quantity of entireness and continuance, before it come to discontinue and break itself into arms and boughs: therefore it is good, before we enter into the former distribution, to erect and constitute one universal science, by the name of *philosophia prima*, *primitive* or *summary philosophy*, as the main and common way, before we come where the ways

The *Philosophia Prima* precedes all divisions.

part and divide themſelves; which ſcience whether I ſhould report as deficient or no, I ſtand doubtful. For I find a certain rhapſody of natural theology, and of divers parts of logic; and of that part of natural philoſophy which concerneth the principles, and of that other part of natural philoſophy which concerneth the ſoul or ſpirit; all theſe ſtrangely commixed and confuſed; but being examined, it ſeemeth to me rather a depredation of other ſciences, advanced and exalted unto ſome height of terms, than anything ſolid or ſubſtantive of itſelf. Nevertheleſs I cannot be ignorant of the diſtinction which is current, that the ſame things are handled but in ſeveral reſpects. As for example, that logic conſidereth of many things as they are in notion, and this philoſophy as they are in nature; the one in appearance, the other in exiſtence; but I find this difference better made than purſued. For if they had conſidered *quantity*, *ſimilitude*, *diverſity*, and the reſt of thoſe extern characters of things, as philoſophers, and in nature, their inquiries muſt of force have been of a far other kind than they are. For doth any of them, in handling *quantity*, ſpeak of the force of union, how and how far it multiplieth virtue? Doth any give the reaſon, why ſome things in nature are ſo common, and in ſo great maſs, and others ſo rare, and in ſo ſmall quantity? Doth any, in handling *ſimilitude* and *diverſity*, aſſign the cauſe why iron ſhould not move to iron, which is more like, but move to the lode-ſtone, which is leſs like? Why in all diverſities of things there ſhould be certain

participles in nature, which are almoſt ambiguous to which kind they ſhould be referred? But there is a mere and deep ſilence touching the nature and operation of thoſe common adjuncts of things, as in nature: and only a reſuming and repeating of the force anduſe of them in ſpeech or argument. Therefore, becauſe in a writing of this nature, I avoid all ſubtilty, my meaning touching this original or univerſal philoſophy is thus, in a plain and groſs deſcription by negative: *That it be a receptacle for all ſuch profitable obſervations and axioms as fall not within the compaſs of any of the ſpecial parts of philoſophy or ſciences, but are more common and of a higher ſtage.*

Now that there are many of that kind need not to be doubted. For example: is not the rule, *Si inæqualibus æqualia addas, omnia erunt inæqualia*, an axiom as well of juſtice as of the mathematics?[59] and is there not a true coincidence between commutative and diſtributive juſtice, and arithmetical and geometrical proportion? Is not that other rule, *Quæ in eodem tertio conveniunt, et inter ſe conveniunt*, a rule taken from the mathematics, but ſo potent in logic as all ſyllogiſms are built upon it? Is not the obſervation, *Omnia mutantur, nil interit*,[60] a contemplation in philoſophy thus, that the *quantum* of nature is eternal? in natural theology thus, that it requireth the ſame Omnipo-

[59] In Ellis and Spedding's ed. there is a note ſaying that this clauſe and its ſucceſſor are tranſpoſed in the original ed. This is not the caſe in the copy I have collated. And in one or two other notices of variation my copy did not bear out their remarks.

[60] Plat. *Theæt.* i. 152. Ovid, *Met.* xv. 165.

tence to make ſomewhat nothing, which at the firſt made nothing ſomewhat? according to the Scripture, *Didici quod omnia opera, quæ fecit Deus, perſeverent in perpetuum; non poſſumus eis quicquam addere nec auferre.*[61] Is not the ground, which Machiavel wiſely and largely diſcourſeth concerning governments, that the way to eſtabliſh and preſerve them, is to reduce them *ad principia*, a rule in religion and nature, as well as in civil adminiſtration?[62] Was not the Perſian magic a reduction or correſpondence of the principles and architectures of nature to the rules and policy of governments? Is not the precept of a muſician, to fall from a diſcord or harſh accord upon a concord or ſweet accord, alike true in affection. Is not the trope of muſic, to avoid or ſlide from the cloſe or cadence, common with the trope of rhetoric of deceiving expectation?[63] Is not the delight of the quavering upon a ſtop in muſic the ſame with the playing of light upon the water?

Splendet tremulo ſub lumine pontus.[64]

Are not the organs of the ſenſes of one kind with the organs of reflection, the eye with a glaſs, the ear with a cave or ſtrait determined and bounded? Neither are theſe only ſimilitudes, as men of narrow obſervation may conceive them to be, but the ſame footſteps of nature, treading or printing upon ſeveral ſubjects or matters. This ſcience, therefore, as I underſtand it, I may juſtly report as de-

[61] Ecclus. xlii. 21.
[62] Diſcourſe on Livy, iii. 1.
[63] See *Nov. Org.* ii. 27. "Inſtantiæ conformes."
[64] Virg. *Æn.* vii. 9.

ficient: for I see sometimes the profounder sort of wits in handling some particular argument will now and then draw a bucket of water out of this well for their present use; but the spring-head thereof seemeth to me not to have been visited; being of so excellent use, both for the discloſing of nature, and the abridgment of art.

De Aug. III. 2.

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

Omnes Cœlicolas, omnes supera alta tenentes,[65]

we may return to the former distribution of the three philosophies, *divine*, *natural*, and *human*.

(1.) Divine Philosophy, or Natural Theology.

And as concerning *divine philosophy* or *natural theology*, it is that knowledge or rudiment of knowledge concerning God, which may be obtained by the contemplation of His creatures; which knowledge may be truly termed *divine* in respect of the object, and *natural* in respect of the light. The bounds of this knowledge are, that it sufficeth to convince atheism, but not to inform religion: and therefore there was never miracle wrought by God to convert an atheist, because the light of nature might have led him to confess a God: but miracles have been wrought to convert idolaters and the superstitious, because no light of nature extendeth to declare the will and true worship of God. For as all works do show forth the power and skill of the workman, and not his image; so it is of the works of God, which do show the omnipotency and wisdom of the Maker, but not His

[65] Virg. *Æn.* vi. 787.

image: and therefore therein the heathen opinion differeth from the ſacred truth; for they ſuppoſed the world to be the image of God, and man to be an extract or compendious image of the world;[66] but the Scriptures never vouchſafe to attribute to the world that honour, as to be the image of God, but only the *work of His hands*:[67] neither do they ſpeak of any other image of God, but man: wherefore by the contemplation of nature to induce and enforce the acknowledgment of God, and to demonſtrate His power, providence, and goodneſs, is an excellent argument, and hath been excellently handled by divers.

But on the other ſide, out of the contemplation of nature, or ground of human knowledge, to induce any verity or perſuaſion concerning the points of faith, is in my judgment not ſafe: *Da fidei quæ fidei ſunt.*[68] For the heathens themſelves conclude as much in that excellent and divine fable of the golden chain: *That men and gods were not able to draw Jupiter down to the earth; but contrariwiſe, Jupiter was able to draw them up to heaven.*[69] So as we ought not to attempt to draw down or ſubmit the myſteries of God to our reaſon; but contrariwiſe to raiſe and advance our reaſon to the divine truth. So as in this part of knowledge, touching divine philoſophy, I am ſo far from noting any deficience, as I rather note an exceſs: where-

[66] Μικρόκοσμος—a favourite dogma with Paracelſus, who divided the body of man according to the cardinal points of the world. But Bacon is perhaps referring to the Platoniſts in the firſt part of the ſentence.

[67] Ps. viii. 3. [68] Luke xx. 25. [69] Hom. *Il.* viii. 19-22.

unto I have digreſſed becauſe of the extreme prejudice which both religion and philoſophy have received and may receive, by being commixed together; as that which undoubtedly will make an heretical religion, and an imaginary and fabulous philoſophy.

Otherwiſe it is of the nature of angels and ſpirits, which is an appendix of theology both divine and natural, and is neither inſcrutable nor interdicted; for although the Scripture ſaith, *Let no man deceive you in ſublime diſcourſe touching the worſhip of angels, preſſing into that he knoweth not*, &c.,[70] yet, notwithſtanding, if you obſerve well that precept, it may appear thereby that there be two things only forbidden, adoration of them, and opinion fantaſtical of them, either to extol them farther than appertaineth to the degree of a creature, or to extol a man's knowledge of them farther than he hath ground. But the ſober and grounded inquiry, which may ariſe out of the paſſages of holy Scriptures, or out of the gradations of nature, is not reſtrained. So of degenerate and revolted ſpirits, the converſing with them or the employment of them is prohibited, much more any veneration towards them; but the contemplation or ſcience of their nature, their power, their illuſions, either by Scripture or reaſon, is a part of ſpiritual wiſdom. For ſo the apoſtle ſaith, *We are not ignorant of his ſtratagems.*[71] And it is no more unlawful to inquire the nature of evil ſpirits, than to inquire the force of poiſons in nature, or the

[70] Coloſs. ii. 18. [71] 2 Cor. ii. 11.

nature of ſin and vice in morality. But this part touching angels and ſpirits I cannot note as deficient, for many have occupied themſelves in it;[72] I may rather challenge it, in many of the writers thereof, as fabulous and fantaſtical.

De Augm. III. 3. (2.) Natural Philoſophy.

Leaving therefore divine philoſophy or natural theology, (not Divinity or inſpired theology, which we reſerve for the laſt of all, as the haven and ſabbath of all man's contemplations) we will now proceed to natural philoſophy.

If then it be true that Democritus ſaid, *That the truth of nature lieth hid in certain deep mines and caves*,[73] and if it be true likewiſe that the alchemiſts do ſo much inculcate, that Vulcan is a ſecond nature, and imitateth that dexterouſly and compendiouſly, which nature worketh by ambages and length of time, it were good to divide natural philoſophy into the mine and the furnace: and to make two profeſſions or occupations of natural philoſophers, ſome to be pioneers and ſome ſmiths; ſome to dig, and ſome to refine and hammer: and ſurely I do beſt allow of a diviſion of that kind, though in more familiar and ſcholaſtical terms; namely, that theſe be the two parts of natural philoſophy,—the *inquiſition of cauſes*, and the *production of effects; ſpeculative*, and *operative; naturalſcience*, and *natural prudence*. For as in civil matters there is a wiſdom of diſcourſe and a wiſdom of direction;

[72] The nature of Angels was a favourite ſubject of ſpeculation and diſcuſſion among the Schoolmen, whoſe writings on it deſerve Bacon's cenſure.

[73] *ἐν βυθῷ γὰρ ἡ ἀλήθεια.* Diog. Laert. ix. 72.—Whence our "Truth lies at the bottom of a Well."

ſo is it in natural. And here I will make a requeſt, that for the latter, or at leaſt for a part thereof, I may revive and reintegrate the miſapplied and abuſed name of *natural magic*;[74] which, in the true ſenſe, is but *natural wiſdom*, or *natural prudence;* taken according to the ancient acception, purged from vanity and ſuperſtition. Now although it be true, and I know it well, that there is an intercourſe between cauſes and effects, ſo as both theſe knowledges, ſpeculative and operative, have a great connection between themſelves; yet becauſe all true and fruitful natural philoſophy hath a double ſcale or ladder, aſcendent and deſcendent: aſcending from experiments to the invention of cauſes, and deſcending from cauſes to the invention of new experiments; therefore I judge it moſt requiſite that theſe two parts be ſeverally conſidered and handled.

De Aug. III. 4. Natural ſcience is Phyſical and Metaphyſical: the latter defined.

Natural ſcience or *theory* is divided into *phyſique* and *metaphyſique:* wherein I deſire it may be conceived that I uſe the word metaphyſique in a differing ſenſe from that that is received: and in like manner, I doubt not but it will eaſily appear to men of judgment, that in this and other particulars, whereſoever my conception and notion may differ from the ancient, yet I am ſtudious to keep the ancient terms. For hoping well to deliver myſelf from miſtaking, by the order and perſpicuous expreſſing of that I do propound, I am otherwiſe zealous and affectionate to recede as little

[74] Cf. *Nov. Org.* ii. 9, and 51, and *De Augm.* iii. 5, where he aſſerts for the term Magic its proper honours.

from antiquity, either in terms or opinions, as may ſtand with truth and the proficience of knowledge. And herein I cannot a little marvel at the philoſopher Ariſtotle, that did proceed in ſuch a ſpirit of difference and contradiction towards all antiquity: undertaking not only to frame new words of ſcience at pleaſure, but to confound and extinguiſh all ancient wiſdom: inſomuch as he never nameth or mentioneth an ancient author or opinion, but to confute and reprove;[75] wherein for glory, and drawing followers and diſciples, he took the right courſe. For certainly there cometh to paſs and hath place in human truth, that which was noted and pronounced in the higheſt truth: *Veni in nomine Patris, nec recipitis me; ſi quis venerit in nomine ſuo eum recipietis.*[76] But in this divine aphoriſm, (conſidering to whom it was applied, namely to Antichriſt, the higheſt deceiver,) we may diſcern well that the coming in a man's own name, without regard of antiquity or paternity, is no good ſign of truth, although it be joined with the fortune and ſucceſs of an *Eum recipietis*. But for this excellent perſon Ariſtotle, I will think of him that he learned that humour of his ſcholar, with whom, it ſeemeth, he did emulate; the one to conquer all opinions, as the other to conquer all nations; wherein nevertheleſs, it may be, he may at ſome men's hands that are of a bitter diſpoſition get a like title as his ſcholar did:

[75] Cf. *Nov. Org.* i. 63. 67; where he likens him to the Turks, whoſe Sultans on aſcending the throne murder all the ſeed royal. Cf. Ar. *Eth. Nic.* I. 6. i. where Ariſtotle declares that it is ſometimes needful for truth's ſake *καὶ τὰ οἰκεῖα ἀναιρεῖν.*

[76] John v. 43.

Felix terrarum prædo, non utile mundo
Editus exemplum, &c.

So

Felix doctrinæ prædo.[77]

But to me, on the other ſide, that do deſire as much as lieth in my pen to ground a ſociable intercourſe between antiquity and proficience, it ſeemeth beſt to keep way with antiquity *uſque ad aras;* and therefore to retain the ancient terms, though I ſometimes alter the uſes and definitions, according to the moderate proceeding in civil government; where although there be ſome alteration, yet that holdeth which Tacitus wiſely noteth, *Eadem Magiſtratuum vocabula.*[78]

And diſtinguiſhed from the *Philoſophia Prima.*

To return therefore to the uſe and acception of the term Metaphyſique, as I do now underſtand the word; it appeareth, by that which hath been already ſaid, that I intend *philoſophia prima*, Summary Philoſophy, and Metaphyſique, which heretofore have been confounded as one, to be two diſtinct things. For the one I have made as a parent or common anceſtor to all knowledge; and the other I have now brought in as a branch or deſcendent of natural ſcience. It appeareth likewiſe that I have aſſigned to Summary Philoſophy the common principles and axioms which are promiſcuous and indifferent to ſeveral ſciences: I

[77] Illic Pellaei proles veſana Philippi
Felix prædo jacet, terrarum vindice fato
Raptus. . . . .
Nam ſibi libertas unquam ſi redderet orbem,
Ludibrio ſervatus erat, non utile mundo
Editus exemplum. Lucan. *Phars.* x. 20.

[78] Tac. *Ann.* i. 3.

have assigned unto it likewise the inquiry touching the operation of the relative and adventive characters of essences, as *quantity*, *similitude*, *diversity*, *possibility*, and the rest: with this distinction and provision; that they be handled as they have efficacy in nature, and not logically. It appeareth likewise that Natural Theology, which heretofore hath been handled confusedly with Metaphysique, I have inclosed and bounded by itself. It is therefore now a question what is left remaining for Metaphysique; wherein I may without prejudice preserve thus much of the conceit of antiquity, that Physique should contemplate that which is inherent in matter, and therefore transitory; and Metaphysique that which is abstracted and fixed. And again, that Physique should handle that which supposeth in nature only a being and moving; and Metaphysique should handle that which supposeth further in nature a reason, understanding, and platform. But the difference, perspicuously expressed, is most familiar and sensible. For as we divided natural philosophy in general into the *inquiry* of *causes*, and *productions* of *effects*: so that part which concerneth the inquiry of causes we do subdivide according to the received and found division of causes; the one part, which is Physique, inquireth and handleth the *material* and *efficient causes*; and the other, which is Metaphysique, handleth the *formal* and *final causes*.[79]

Physique, taking it according to the derivation, and not according to our idiom for *medicine*, is (1.) Physical; of the material and efficient causes.

[79] For these "four causes," see Arist. *Post. Anal.* ii. 10. 1. Cf. Mill's *Logic*, Bk. iii. Ch. 5.

ſituate in a middle term or diſtance between Natural Hiſtory and Metaphyſique. For natural hiſtory deſcribeth the variety of things; phyſique, the cauſes, but variable or reſpective cauſes; and metaphyſique, the fixed and conſtant cauſes.

> Limus ut hic dureſcit, et hæc ut cera liqueſcit,
> Uno eodemque igni:[80]

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

[80] Virg. *Ecl.* viii. 80.

(2.) Metaphyſical. (*a.*) Of formal cauſes.

For Metaphyſique, we have aſſigned unto it the inquiry of formal and final cauſes; which aſſignation, as to the former of them, may ſeem to be nugatory and void; becauſe of the received and inveterate opinion that the inquiſition of man is not competent to find out eſſential Forms or true differences: of which opinion we will take this hold, that the invention of Forms is of all other parts of knowledge the worthieſt to be ſought, if it be poſſible to be found.[81] As for the poſſibility, they are ill diſcoverers that think there is no land, when they can ſee nothing but ſea. But it is manifeſt that Plato, in his opinion of Ideas, as one that had a wit of elevation ſituate as upon a cliff, did deſcry, *that Forms were the true object of knowledge*;[82] but loſt the real fruit of his opinion, by conſidering of Forms as abſolutely abſtracted from matter, and not confined and determined by matter; and ſo turning his opinion upon theology, wherewith all his natural philoſophy is infected.[83] But if any man ſhall keep a continual watchful and ſevere eye upon action, operation, and the uſe of knowledge, he may adviſe and take notice what are the Forms, the diſcloſures whereof are fruitful and important to the ſtate of man. For as to the forms of ſubſtances, man only except, of whom it is ſaid, *Formavit hominem de limo terræ, et ſpiravit in faciem ejus ſpiraculum vitæ*, and not as of all

[81] See *Nov. Org.* ii. 1. Datæ naturæ formam . . . invenire, opus et intentio eſt humanæ ſcientiæ. The firſt twenty chapters of Bk. ii. of the *Nov. Org.* are an attempt at expanſion of this ſaying.

[82] Plato, *Rep.* x. *init.* [83] *Nov. Org.* i. 96.

other creatures, *Producant aquæ, producat terra*;[84] the Forms of ſubſtances, I ſay, as they are now by compounding and tranſplanting multiplied, are ſo perplexed, as they are not to be inquired; no more than it were either poſſible or to purpoſe to ſeek in groſs the Forms of thoſe ſounds which make words, which by compoſition and tranſpoſition of letters are infinite. But, on the other ſide, to inquire the Form of thoſe ſounds or voices which make ſimple letters is eaſily comprehenſible; and being known, induceth and manifeſteth the Forms of all words, which conſiſt and are compounded of them. In the ſame manner to inquire the Form of a lion, of an oak, of gold; nay, of water, of air, is a vain purſuit: but to inquire the Forms of ſenſe, of voluntary motion, of vegetation, of colours, of gravity and levity, of denſity, of tenuity, of heat, of cold, and all other natures and qualities, which, like an alphabet, are not many, and of which the eſſences, upheld by matter, of all creatures do conſiſt; to inquire, I ſay, the true Forms of theſe, is that part of metaphyſique which we now define of. Not but that Phyſic doth make inquiry, and take conſideration of the ſame natures: but how? Only as to the *material and efficient cauſes* of them, and not as to the Forms. For example; if the cauſe of whiteneſs in ſnow or froth be inquired, and it be rendered thus, that the ſubtile intermixture of air and water is the cauſe, it is well rendered; but, nevertheleſs, is this the form of whiteneſs? No; but it is the efficient, which is ever

[84] Gen. ii. 7, i. 20. 24.

but *vehiculum formæ*.[85] This part of Metaphyſique I do not find laboured and performed: whereat I marvel not; becauſe I hold it not poſſible to be invented by that courſe of invention which hath been uſed; in regard that men, which is the root of all error, have made too untimely a departure and too remote a receſs from particulars.

Good, as it abridges particulars.

But the uſe of this part of Metaphyſique, which I report as deficient, is of the reſt the moſt excellent in two reſpects: the one, becauſe it is the duty and virtue of all knowledge to abridge the infinity of individual experience, as much as the conception of truth will permit, and to remedy the complaint of *vita brevis*, *ars longa*;[86] which is performed by uniting the notions and conceptions of ſciences: for knowledges are as pyramids, whereof hiſtory is the baſis. So of natural philoſophy, the baſis is natural hiſtory; the ſtage next the baſis is phyſique; the ſtage next the vertical point is metaphyſique. As for the vertical point, *opus quod operatur Deus à principio uſque ad finem*,[87] the ſummary law of nature, we know not whether man's inquiry can attain unto it. But theſe three be the true ſtages of knowledge, and are to them that are depraved no better than the giant's hills:

> Ter ſunt conati imponere Pelio Oſſam,
> Scilicet atque Oſſæ frondoſum involvere Olympum.[88]

But to thoſe who refer all things to the glory of

[85] *Nov. Org.* ii. 3, efficiens et materialis cauſa (quæ cauſæ fluxæ ſunt, et nihil aliud quam *vehicula* et cauſæ formam deferentes in aliquibus.)

[86] Hippoc. *Aph.* i. [87] Eccles. iii. 11. [88] *Georg.* i. 281, 282.

God, they are as the three acclamations, *Sancte, ſancte, ſancte!* holy in the deſcription or dilatation of His works; holy in the connection or concatenation of them; and holy in the union of them in a perpetual and uniform law. And therefore the ſpeculation was excellent in Parmenides and Plato, although but a ſpeculation in them, that all things by ſcale did aſcend to unity.[89] So then always that knowledge is worthieſt which is charged with leaſt multiplicity; which appeareth to be metaphyſique; as that which conſidereth the ſimple Forms or differences of things, which are few in number, and the degrees and co-ordinations whereof make all this variety.

And as it gives liberty to man's powers.

The ſecond reſpect, which valueth and commendeth this part of metaphyſique, is that it doth enfranchiſe the power of man unto the greateſt liberty and poſſibility of works and effects. For phyſique carrieth men in narrow and reſtrained ways, ſubject to many accidents of impediments, imitating the ordinary flexuous courſes of nature; but *latæ undique ſunt ſapientibus viæ*:[90] to ſapience, which was anciently defined to be *rerum divinarum et humanarum ſcientia*,[91] there is ever choice of means. For phyſical cauſes give light to new invention in *ſimili materia*; but whoſoever knoweth any Form, knoweth the utmoſt poſſibility of ſuperinducing that nature upon any variety of matter; and ſo is leſs reſtrained in operation, either to the

[89] Plato, *Parm.* 165, 166.
[90] Perhaps Prov. xv. 19, via juſtorum abſque offendiculo.
[91] Cic. *de Off.* i. 43. (154.)

basis of the matter, or the condition of the efficient; which kind of knowledge Salomon likewise, though in a more divine sort, elegantly describeth: *non arctabuntur gressus tui, et currens non habebis offendiculum.*[92] The ways of sapience are not much liable either to particularity or chance.

(*b.*) Of final causes.

The second part of metaphysique is the *inquiry of final causes*, which I am moved to report not as omitted, but as misplaced; and yet if it were but a fault in order, I would not speak of it: for order is matter of illustration, but pertaineth not to the substance of sciences. But this misplacing hath caused a deficience, or at least a great improficience in the sciences themselves. For the handling of final causes mixed with the rest in physical inquiries, hath intercepted the severe and diligent inquiry of all real and physical causes, and given men the occasion to stay upon these satisfactory and specious causes, to the great arrest and prejudice of further discovery. For this I find done not only by Plato, who ever anchoreth upon that shore, but by Aristotle, Galen, and others which do usually likewise fall upon these flats of discoursing causes.[93] For to say *that the hairs of the eyelids are for a quickset and fence about the sight*; or that *the firmness of the skins and hides of living creatures is to defend them from the extremities of heat or cold*; or that *the bones are for the columns or beams, whereupon the frames of the bodies of living creatures are*

[92] Prov. iv. 12.

[93] Aristot. *Phys.* ii. 8, 2, where he illustrates by the teeth. Also Plat. *Tim.* iii. 70, and Galen, *De Usu Partium.*

built: or that *the leaves of trees are for protecting of the fruit;* or that *the clouds are for watering of the earth;* or that *the ſolidneſs of the earth is for the ſtation and manſion of living creatures* and the like, is well inquired and collected in metaphyſique, but in phyſique they are impertinent. Nay, they are indeed but *remoræ*, and hindrances to ſtay and ſlug the ſhip from further ſailing; and have brought this to paſs, that the ſearch of the phyſical cauſes hath been neglected, and paſſed in ſilence. And therefore the natural philoſophy of Democritus and ſome others, (who did not ſuppoſe a mind or reaſon in the frame of things, but attributed the form thereof able to maintain itſelf to infinite eſſays or proofs of nature, which they term *fortune*) ſeemeth to me, as far as I can judge by the recital and fragments which remain unto us, in particularities of phyſical cauſes, more real and better inquired than that of Ariſtotle and Plato; whereof both intermingled final cauſes, the one as a part of theology, and the other as a part of logic, which were the favourite ſtudies reſpectively of both thoſe perſons. Not becauſe thoſe final cauſes are not true, and worthy to be inquired, being kept within their own province; but becauſe their excurſions into the limits of phyſical cauſes hath bred a vaſtneſs and ſolitude in that track. For otherwiſe, keeping their precincts and borders, men are extremely deceived if they think there is an enmity or repugnancy at all between them. For the cauſe rendered, that *the hairs about the eye-lids are for the ſafeguard of the ſight*, doth not

impugn the cauſe rendered, that *piloſity is incident to orifices of moiſture; muſcoſi fontes*,[94] &c. Nor the cauſe rendered, *that the firmneſs of hides is for the armour of the body againſt extremities of heat* or *cold*, doth not impugn the cauſe rendered, *that contraction of pores is incident to the outwardeſt parts, in regard of their adjacence to foreign or unlike bodies:* and ſo of the reſt: both cauſes being true and compatible, the one declaring an *intention*, the other a *conſequence* only. Neither doth this call in queſtion, or derogate from Divine Providence, but highly confirm and exalt it. For as in civil actions he is the greater and deeper politique, that can make other men the inſtruments of his will and ends, and yet never acquaint them with his purpoſe, ſo as they ſhall do it and yet not know what they do, than he that imparteth his meaning to thoſe he employeth; ſo is the wiſdom of God more admirable, when nature intendeth one thing, and Providence draweth forth another, than if He communicated to particular creatures and motions the characters and impreſſions of His Providence. And thus much for metaphyſique: the latter part whereof I allow as extant, but wiſh it confined to his proper place.

Neverthelefs there remaineth yet another part of Natural Philoſophy, which is commonly made a principal part, and holdeth rank with Phyſique ſpecial and Metaphyſique, which is Mathematique; but I think it more agreeable to the nature of things and to the light of order to

De Augm. III. 6. Mathematics may be ranked under Metaphyſics.

[94] Virg. *Ecl.* vii. 45.

place it as a branch of Metaphyſique: for the ſubject of it being *quantity*, (not *quantity indefinite*, which is but a *relative*, and belongeth to *philoſophia prima*, as hath been ſaid, but *quantity determined or proportionable*), it appeareth to be one of the eſſential Forms of things; as that that is cauſative in nature of a number of effects; inſomuch as we ſee, in the ſchools both of Democritus and of Pythagoras,[95] that the one did aſcribe figure to the firſt ſeeds of things, and the other did ſuppoſe numbers to be the principles and originals of things: and it is true alſo that of all other Forms, as we underſtand Forms, it is the moſt abſtracted and ſeparable from matter, and therefore moſt proper to Metaphyſique; which hath likewiſe been the cauſe why it hath been better laboured and inquired than any of the other Forms, which are more immerſed in matter.

For it being the nature of the mind of man, to the extreme prejudice of knowledge, to delight in the ſpacious liberty of generalities, as in a champain region, and not in the incloſures of particularity; the Mathematics of all other knowledge were the goodlieſt fields to ſatisfy that appetite. But for the placing of this ſcience, it is not much material: only we have endeavoured in theſe our partitions to obſerve a kind of perſpective, that one part may caſt light upon another.

This branch is, (*a.*) Pure.

The Mathematics are either *pure* or *mixed*. To the Pure Mathematics are thoſe ſciences belonging

[95] For theſe opinions of Democritus and the Pythagoreans, ſee Ariſtot. *De Anima*, i. 2, *Met.* i. 4, 5.

which handle *quantity determinate*, merely ſevered from any axioms of natural philoſophy; and theſe are two, Geometry and Arithmetic; the one handling quantity continued, and the other diſſevered.

(*b*.) Mixed. Mixed hath for ſubject ſome axioms or parts of natural philoſophy, and conſidereth *quantity determined*, as it is auxiliary and incident unto them. For many parts of nature can neither be invented with ſufficient ſubtilty, nor demonſtrated with ſufficient perſpicuity, nor accommodated unto uſe with ſufficient dexterity, without the aid and intervening of the mathematics; of which ſort are *perſpective*, *muſic*, *aſtronomy*, *coſmography*, *architecture*, *enginery*, and divers others.

In the Mathematics I can report no deficience, except it be that men do not ſufficiently underſtand the excellent uſe of the Pure Mathematics, in that they do remedy and cure many defects in the wit and faculties intellectual. For if the wit be too dull, they ſharpen it; if too wandering, they fix it; if too inherent in the ſenſe, they abſtract it. So that as tennis is a game of no uſe in itſelf, but of great uſe in reſpect it maketh a quick eye and a body ready to put itſelf into all poſtures; ſo in the Mathematics, that uſe which is collateral and intervenient is no leſs worthy than that which is principal and intended. And as for the Mixed Mathematics, I may only make this prediction, that there cannot fail to be more kinds of them, as nature grows further diſcloſed. Thus much of Natural Science, or the part of nature ſpeculative.

ii. Natural Prudence. For Natural Prudence, or the part operative of

Natural Philoſophy, we will divide it into three parts, experimental, philoſophical, and magical; which three parts active have a correſpondence and analogy with the three parts ſpeculative, natural hiſtory, phyſique, and metaphyſique: for

(1.) Experimental. many operations have been invented, ſometimes by a caſual incidence and occurrence, ſometimes by a purpoſed experiment: and of thoſe which have been found by an intentional experiment, ſome have been found out by varying or extending the ſame experiment, ſome by transferring and compounding divers experiments the one into the other, which kind of invention an empiric may manage.

De Augm. III. 5. (2.) Philoſophical. Again, by the knowledge of phyſical cauſes there cannot fail to follow many indications and deſignations of new particulars, if men in their ſpeculation will keep one eye upon uſe and practice. But theſe are but coaſtings along the ſhore, *Premendo littus iniquum:*[96] for it ſeemeth to me there can hardly be diſcovered any radical or fundamental alterations and innovations in nature, either by the fortune and eſſays of experiments, or by the light and direction of phyſical cauſes.

(3.) Magical. If therefore we have reported Metaphyſique deficient, it muſt follow that we do the like of natural Magic, which hath relation thereunto. For as for the Natural Magic whereof now there is mention in books, containing certain credulous and ſuperſtitious conceits and obſervations of ſympathies and antipathies, and hidden properties, and ſome

[96] Hor. *Od.* ii. x. 3.

frivolous experiments, ſtrange rather by diſguiſement than in themſelves; it is as far differing in truth of nature from ſuch a knowledge as we require, as the ſtory of King Arthur of Britain, or Hugh of Bordeaux, differs from Cæſar's Commentaries in truth of ſtory. For it is manifeſt that Cæſar did greater things *de vero* than thoſe imaginary heroes were feigned to do; but he did them not in that fabulous manner. Of this kind of learning the fable of Ixion[97] was a figure, who deſigned to enjoy Juno, the goddeſs of power; and inſtead of her had copulation with a cloud, of which mixture were begotten centaurs and chimeras. So whoſoever ſhall entertain high and vaporous imaginations, inſtead of a laborious and ſober inquiry of truth, ſhall beget hopes and beliefs of ſtrange and impoſſible ſhapes.

And therefore we may note in theſe ſciences which hold ſo much of imagination and belief, as this degenerate Natural Magic, Alchemy, Aſtrology, and the like, that in their propoſitions the deſcription of the mean is ever more monſtrous than the pretence or end. For it is a thing more probable, that he that knoweth well the natures of *weight*, of *colour*, of *pliant* and *fragile*, in reſpect of the hammer, of *volatile* and *fixed* in reſpect of the fire and the reſt, may ſuperinduce upon ſome metal the nature and Form of gold by ſuch mechanique as belongeth to the production of the natures afore rehearſed, than that ſome grains of the medicine projected ſhould in a few moments of

[97] Pind. *Pyth.* ii. 21.

time turn a ſea of quickſilver or other material into gold: ſo it is more probable that he that knoweth the nature of arefaction, the nature of aſſimilation of nouriſhment to the thing nouriſhed, the manner of increaſe and clearing of ſpirits, the manner of the depredations which ſpirits make upon the humours and ſolid parts, ſhall by ambages of diets, bathings, anointings, medicines, motions, and the like, prolong life, or reſtore ſome degree of youth or vivacity, than that it can be done with the uſe of a few drops or ſcruples of a liquor or receipt. To conclude, therefore, the true Natural Magic, which is that great liberty and latitude of operation which dependeth upon the knowledge of Forms, I may report deficient, as the relative thereof is.

To which part, if we be ſerious, and incline not to vanities and plauſible diſcourſe, beſides the deriving and deducing the operations themſelves from Metaphyſique, there are pertinent two points of much purpoſe, the one by way of preparation, the other by way of caution: the firſt is, that there be made a kalendar, 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 whereof man is already poſſeſſed; out of which doth naturally reſult a note, what things are yet held impoſſible, or not invented: which kalendar 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

potentials man's inquiry may be more awake in deducing direction of works from the ſpeculation of cauſes: and ſecondly, that thoſe experiments be not only eſteemed which have an immediate and preſent uſe, but thoſe principally which are of moſt univerſal conſequence for invention of other experiments, and thoſe which give moſt light to the invention of cauſes; for the invention of the mariner's needle, which giveth the direction, is of no leſs benefit for navigation than the invention of the ſails which give the motion.

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

Non canimus ſurdis, reſpondent omnia ſylvæ.[98]

The voice of nature will conſent, whether the voice of man do or no. And as Alexander Borgia was wont to ſay of the expedition of the French for Naples, that they came with chalk in their hands to mark up their lodgings, and not with weapons to fight; ſo I like better that entry of truth which cometh peaceably, with chalk to mark up thoſe minds which are capable to lodge and harbour it, than that which cometh with pugnacity and contention.[99]

But there remaineth a diviſion of natural philo- De Augm. III. 4.

[98] Virg. *Ecl.* x. 8.

[99] *Nov. Org.* i. 35. This ſaying of Alexander VI. was called forth by the expedition of Charles VIII. which over-ran Italy in about five months, A.D. 1494.

ſophy according to the report of the inquiry, and nothing concerning the matter or ſubject; and that is poſitive and conſiderative; when the inquiry reporteth either an aſſertion or a doubt. Theſe doubts or *non liquets* are of two ſorts, particular and total. For the firſt, we ſee a good example thereof in Ariſtotle's Problems, which deſerved to have had a better continuance; but ſo nevertheleſs as there is one point whereof warning is to be given and taken. The regiſtering of doubts hath two excellent uſes: the one, that it ſaveth philoſophy from errors and falſehoods; when that which is not fully appearing is not collected into aſſertion, whereby error might draw error, but reſerved in doubt: the other, that the entry of doubts are as ſo many ſuckers or ſponges to draw uſe of knowledge; inſomuch as that which, if doubts had not preceded, a man ſhould never have adviſed, but paſſed it over without note, by the ſuggeſtion and ſolicitation of doubts, is made to be attended and applied. But both theſe commodities do ſcarcely countervail an inconvenience which will intrude itſelf, if it be not debarred; which is, that when a doubt is once received, men labour rather how to keep it a doubt ſtill, than how to ſolve it; and accordingly bend their wits. Of this we ſee the familiar example in lawyers and ſcholars, both which, if they have once admitted a doubt, it goeth ever after authorized for a doubt. But that uſe of wit and knowledge is to be allowed, which laboureth to make doubtful things certain, and not thoſe which labour to make certain things

doubtful. Therefore theſe kalendars of doubts I commend as excellent things; ſo that there be this caution uſed, that when they be thoroughly ſifted and brought to reſolution, they be from thenceforth omitted, decarded, and not continued to cheriſh and encourage men in doubting. To which kalendar of doubts or problems, I adviſe be annexed another kalendar, as much or more material, which is a Kalendar of popular errors: I mean chiefly in natural hiſtory, ſuch as paſs in ſpeech and conceit, and are nevertheleſs apparently detected and convicted of untruth; that man's knowledge be not weakened nor embaſed by ſuch droſs and vanity.

As for the doubts or *non liquets* general, or in total, I underſtand thoſe differences of opinions touching the principles of nature, and the fundamental points of the ſame, which have cauſed the diverſity of ſects, ſchools, and philoſophies, as that of Empedocles, Pythagoras, Democritus, Parmenides, and the reſt. For although Ariſtotle, as though he had been of the race of the Ottomans, thought he could not reign except the firſt thing he did he killed all his brethren;[1] yet to thoſe that ſeek Truth and not magiſtrality, it cannot but ſeem a matter of great profit, to ſee before them the ſeveral opinions touching the foundations of nature; not for any exact truth that can be ex-

[1] See Ellis' note on *De Augm.* iii. 4, where he ſuggeſts, moſt probably, that Bacon is alluding to the acts of Mahomet III. who, on becoming Sultan, in A.D. 1595, put to death nineteen brothers, and ten or twelve women, ſuppoſed to be with child by his father. He adds that the practice was eſtabliſhed as a fundamental State Law by Mahomet II.

pected in those theories; for as the same phenomena in astronomy are satisfied by the received astronomy of the diurnal motion, and the proper motions of the planets, with their eccentrics and epicycles, and likewise by the theory of Copernicus,[2] who supposed the earth to move, (and the calculations are indifferently agreeable to both,) so the ordinary face and view of experience is many times satisfied by several theories and philosophies; whereas to find the real truth requireth another manner of severity and attention. For as Aristotle saith,[3] that children at the first will call every woman mother, but afterward they come to distinguish according to truth, so experience, if it be in childhood, will call every philosophy mother, but when it cometh to ripeness, it will discern the true mother. So as in the mean time it is good to see the several glosses and opinions upon nature, whereof, it may be, every one in some one point hath seen clearer than his fellows: therefore I wish some collection to be made, painfully and understandingly, *de antiquis philosophiis*, out of all the possible light which remaineth to us of them: which kind of work I find deficient. But here I must give warning, that it be done distinctly and severally;[4] the philosophies of every one through-

[2] *Nov. Org.* i. 45. where he calls these "eccentrics and epicycles," *lineæ spirales et dracones*. Bacon was ignorant of, and incurious about Mathematics and Astronomy at this time; and shows no good will towards Galileo and the "Copernican theory."

[3] Aristot. *Phys.* i. 1.

[4] Edd. 1605, 1633, read *severely*; but the Latin has *distincte*, which seems to require *severally*.

out by themſelves; and not by titles packed and fagotted up together, as hath been done by Plutarch. For it is the harmony of a philoſophy in itſelf which giveth it light and credence; whereas if it be ſingled and broken, it will ſeem more foreign and diſſonant. For as when I read in Tacitus the actions of Nero, or Claudius, with circumſtances of times, inducements, and occaſions, I find them not ſo ſtrange; but when I read them in Suetonius Tranquillus, gathered into titles and bundles, and not in order of time, they ſeem more monſtrous and incredible: ſo is it of any philoſophy reported entire, and diſmembered by articles. Neither do I exclude opinions of latter times to be likewiſe repreſented in this kalendar of ſects of philoſophy, as that of Theophraſtus Paracelſus,[5] eloquently reduced into a harmony by the pen of Severinus the Dane:[6] and that of Teleſius[7] and his ſcholar Donius, being as a paſtoral philoſophy, full of ſenſe, but of no great depth; and that of Fracaſtorius,[8] who, though he pretended not to make any new philoſophy, yet did uſe the abſoluteneſs of his own ſenſe upon the old; and that of Gilbertus our countryman,[9] who revived, with

[5] Paracelſus (von Hohenheim), enthuſiaſt and alchemiſt, born A. D. 1493, died A. D. 1541. He, though in a purpoſely obſcure way, did much ſervice to experimental philoſophy.

[6] Severinus, a Daniſh phyſician, died in 1602.

[7] Teleſius, born in 1509 at Cotenza; who, as Bacon adds in the Latin, revived the philoſophy of Parmenides.

[8] Fracaſtorius, born in 1483 at Verona; a man of greateſt worth, diſintereſtedneſs, and capacity; whether as Poet, Philoſopher, Phyſician, Aſtronomer, or Mathematician. But of courſe Bacon has no good word for him.

[9] Gilbertus, Court Phyſician to Elizabeth and James I, a great

ſome alterations and demonſtrations, the opinions of Xenophanes: and any other worthy to be admitted.

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

(3.) De Augm. IV. I. Human Philoſophy.

We come therefore now to that knowledge whereunto the ancient oracle directeth us, which is *the knowledge of ourſelves*;[10] which deſerveth the more accurate handling, by how much it toucheth us more nearly. This knowledge, as it is the end and term of natural philoſophy in the intention of man, ſo notwithſtanding it is but a portion of natural philoſophy in the continent of nature: and generally let this be a rule, that all partitions of knowledges be accepted rather for lines and veins than for ſections and ſeparations; and that the continuance and entireneſs of knowledge be preſerved. For the contrary hereof hath made particular ſciences to become barren, ſhallow, and erroneous, while they have not been nouriſhed and maintained from the common fountain. So we ſee Cicero the orator complained of Socrates and his ſchool, that he was the firſt that ſeparated philoſophy and rhetoric;[11] whereupon rhetoric

experimentaliſt and diſcoverer in Magnetiſm. Bacon ſeems to have regarded him with eſpecial ill-will.

[10] Plat. *Alcib. Pr.* ii. 124. [11] Cic. *de Orat.* iii. 16, 17.

became an empty and verbal art. So we may ſee that the opinion of Copernicus touching the rotation of the earth, which aſtronomy itſelf cannot correct, becauſe it is not repugnant to any of the phænomena, yet natural philoſophy may correct. So we ſee alſo that the ſcience of medicine, if it be deſtituted and forſaken by natural philoſophy, it is not much better than an empirical practice. With this reſervation therefore we proceed to human philoſophy or humanity, which hath two parts: the one conſidereth man *ſegregate* or *diſtributively*; the other *congregate* or *in ſociety*. So as human philoſophy is either ſimple and particular, or conjugate and civil.

Is either ſegregate (of individuals), or congregate (of ſocieties).

Humanity particular conſiſteth of the ſame parts whereof man conſiſteth; that is, of knowledges which reſpect the body, and of knowledges which reſpect the mind. But before we diſtribute ſo far, it is good to conſtitute. For I do take the conſideration in general and at large of human nature to be fit to be emancipate and made a knowledge by itſelf: not ſo much in regard of thoſe delightful and elegant diſcourſes which have been made of the dignity of man, of his miſeries, of his ſtate and life, and the like adjuncts of his common and undivided nature; but chiefly in regard of the knowledge concerning the ſympathies and concordances between the mind and body, which being mixed cannot be properly aſſigned to the ſciences of either.

i. Segregate. (*a.*) Of the Body. (*b.*) Of the Mind.

Firſt, as to the Sympathies between them.

This knowledge hath two branches: for as all leagues and amities conſiſt of mutual intelligence

This in two parts.

and mutual offices, ſo this league of mind and body hath theſe two parts; how the one diſcloſeth the other, and how the one worketh upon the other; diſcovery and impreſſion. The former of theſe hath begotten two arts, both of *prediction* or *prenotion*; whereof the one is honoured with the inquiry of Ariſtotle, and the other of Hippocrates.[12] And although they have of later time been uſed to be coupled with ſuperſtitious and fantaſtical arts, yet being purged and reſtored to their true ſtate, they have both of them a ſolid ground in nature, and a profitable uſe in life. The firſt is *phyſiognomy*, which diſcovereth the diſpoſition of the mind by the lineaments of the body: the ſecond is the *expoſition of natural dreams*, which diſcovereth the ſtate of the body by the imaginations of the mind. In the former of theſe I note a deficience. For Ariſtotle hath very ingeniouſly and diligently handled the factures of the body, but not the geſtures of the body, which are no leſs comprehenſible by art, and of greater uſe and advantage.[13] For the lineaments of the body do diſcloſe the diſpoſition and inclination of the mind in general; but the motions of the countenance and parts do not only ſo, but do further diſcloſe the preſent humour and ſtate of the mind and will. For as your majeſty ſaith moſt aptly and elegantly, *As the tongue ſpeaketh to the ear ſo the geſture ſpeaketh to*

(*a.*) Diſcovery.

[12] In his *Prænotiones*.

[13] In the treatiſes on the Hiſtory and Parts of Animals. The ſubject of Geſture may be ſaid to come under the ſhort treatiſes on the External Phenomena of the Animal Kingdom: and in that on the Motion of Animals.

the eye.[14] And therefore a number of ſubtle perſons, whoſe eyes do dwell upon the faces and faſhions of men, do well know the advantage of this obſervation, as being moſt part of their ability; neither can it be denied, but that it is a great diſcovery of diſſimulations, and a great direction in buſineſs.

The latter branch, touching *impreſſion*, hath not been collected into art, but hath been handled diſperſedly; and it hath the ſame relation or *antiſtrophe* that the former hath. For the conſideration is double: either *how, and how far the humours and affects of the body do alter or work upon the mind; or again, how and how far the paſſions or apprehenſions of the mind do alter or work upon the body.* The former of theſe hath been inquired and conſidered as a part and appendix of medicine, but much more as a part of religion or ſuperſtition. For the phyſician preſcribeth cures of the mind in phrenſies and melancholy paſſions; and pretendeth alſo to exhibit medicines to exhilarate the mind, to confirm the courage, to clarify the wits, to corroborate the memory, and the like: but the ſcruples and ſuperſtitions of diet and other regimen of the body in the ſect of the Pythagoreans, in the hereſy of the Manicheans, and in the law of Mahomet, do exceed. So likewiſe the ordinances in the ceremonial law, interdicting the eating of the blood and the fat, diſtinguiſhing between beaſts clean and unclean for meat, are many and ſtrict. Nay

(β.) Impreſſion.

[14] Spedding gives *Baſilikon Doron*, Bk. iii. as the place whence this quotation comes. Cf. Horace, *A. P.* 180, 181.

the faith itſelf being clear and ſerene from all clouds of ceremony, yet retaineth the uſe of faſtings, abſtinences, and other macerations and humiliations of the body, as things real, and not figurative. The root and life of all which preſcripts is, beſides the ceremony, the conſideration of that dependency which the affections of the mind are ſubmitted unto upon the ſtate and diſpoſition of the body. And if any man of weak judgment do conceive that this ſuffering of the mind from the body doth either queſtion the immortality, or derogate from the ſovereignty of the ſoul, he may be taught in eaſy inſtances, that the infant in the mother's womb is compatible with the mother and yet ſeparable;[15] and the moſt abſolute monarch is ſometimes led by his ſervants and yet without ſubjection. As for the reciprocal knowledge, which is the operation of the conceits and paſſions of the mind upon the body, we ſee all wiſe phyſicians, in the preſcriptions of their regiments to their patients, do ever conſider *accidentia animi* as of great force to further or hinder remedies or recoveries: and more eſpecially it is an inquiry of great depth and worth concerning imagination, how and how far it altereth the body proper of the imaginant. For although it hath a manifeſt power to hurt, it followeth not it hath the ſame degree of power to help; no more than a man can conclude, that becauſe there be peſtilent airs able ſuddenly to kill a man in health, therefore there ſhould be ſovereign

[15] Qui ſimul cum matris affectibus compatitur, et tamen e corpore matris ſuo tempore excluditur. *De Augm.*

airs able ſuddenly to cure a man in ſickneſs. But the inquiſition of this part is of great uſe, though it needeth, as Socrates ſaid, *a Delian diver*,[16] being difficult and profound. But unto all this knowledge *de communi vinculo*, of the concordances between the mind and the body, that part of inquiry is moſt neceſſary, which conſidereth of the ſeats and domiciles which the ſeveral faculties of the mind do take and occupate in the organs of the body; which knowledge hath been attempted, and is controverted, and deſerveth to be much better inquired. For the opinion of Plato,[17] who placed the *underſtanding in the brain*, *animoſity* (which he did unfitly call *anger*, having a greater mixture with *pride*) *in the heart*, and *concupiſcence or ſenſuality* in the *liver*, deſerveth not to be deſpiſed; but much leſs to be allowed. So then we have conſtituted, as in our own wiſh and advice, the inquiry touching human nature entire, as a juſt portion of knowledge to be handled apart.

The knowledge that concerneth man's body is divided as the good of man's body is divided, unto which it referreth. The good of man's body is of four kinds, Health, Beauty, Strength, and Pleaſure: De Aug. iv. 2. (*a.*) Of Human Philoſophy regarding the Body.

[16] Diog. Laert. ii. 22. Socrates ſpeaks of a work of Heraclitus which Euripides had lent him: "Delio quopiam natatore indiget."

[17] Plat. *Tim.* 69, 70, (Steph.) In the *head*, *τὸ θεῖον*: then below the iſthmus of the neck, the mortal part of man; firſt *τὸ μέτεχον τῆς ψυχῆς ἀνδρείας καὶ θυμοῦ*; (ſo that Bacon is ſcarcely right in his cenſure; for neither *ἀνδρεία* nor *θυμὸς* is *anger*) then the *diaphragm* to divide the parts; then in the *heart* he placed *θάῤῥος καὶ φόβος*; and below it *τὸ ἐπιθυμητικὸν*, *ὥσπερ ἐν φάτνῃ . . . καταδεδεμένον*—in the *liver*.

ſo the knowledges are Medicine, or art of Cure; art of Decoration, which is called Coſmetic; art of Activity, which is called Athletic; and art Voluptuary, which Tacitus truly calleth *eruditus luxus*.[18] This ſubject of man's body is of all other things in nature moſt ſuſceptible of remedy; but then that remedy is moſt ſuſceptible of error. For the ſame ſubtility of the ſubject doth cauſe large poſſibility and eaſy failing; and therefore the inquiry ought to be the more exact.

(*a*.) Medicine.

To ſpeak therefore of Medicine, and to reſume that we have ſaid, aſcending a little higher: the ancient opinion that man was *microcoſmus*, an abſtract or model of the world, hath been fantaſtically ſtrained by Paracelſus[19] and the alchemiſts, as if there were to be found in man's body certain correſpondences and parallels, which ſhould have reſpect to all varieties of things, as ſtars, planets, minerals, which are extant in the great world. But thus much is evidently true, that of all ſubſtances which nature hath produced, man's body is the moſt extremely compounded. For we ſee herbs and plants are nouriſhed by earth and water; beaſts for the moſt part by herbs and fruits; man by the fleſh of beaſts, birds, fiſhes, herbs, grains, fruits, water, and the manifold alterations, dreſſings, and preparations of the ſeveral bodies, before they come to be his food and aliment. Add hereunto, that beaſts have a more ſimple order of life, and leſs change of affections to work upon their

[18] Tac. *Ann.* xvi. 18.

[19] See Ellis and Spedding's note to *Nov. Org.* ii. 48. (p. 339.)

bodies: whereas man in his manſion, ſleep, exerciſe, paſſions, hath infinite variations: and it cannot be denied but that the Body of man of all other things is of the moſt compounded maſs. The Soul on the other ſide is the ſimpleſt of ſubſtances, as is well expreſſed:

Purumque reliquit
Æthereum ſenſum atque auraï ſimplicis ignem.[20]

So that it is no marvel though the ſoul ſo placed enjoy no reſt, if that principle be true, that *Motus rerum eſt rapidus extra locum, placidus in loco.* But to the purpoſe: this variable compoſition of man's body hath made it as an inſtrument eaſy to diſtemper; and therefore the poets did well to conjoin Muſic and Medicine in Apollo,[21] becauſe the office of Medicine is but to tune this curious harp of man's body and to reduce it to harmony. So then the ſubject being ſo variable, hath made the art by conſequence more conjectural; and the art being conjectural hath made ſo much the more place to be left for impoſture. For almoſt all other arts and ſciences are judged by acts, or maſter-pieces, as I may term them, and not by the ſucceſſes and events. The lawyer is judged by the virtue of his pleading, and not by the iſſue of the cauſe; the maſter of the ſhip is judged by the directing his courſe aright, and not by the fortune of the voyage; but the phyſician, and perhaps the politique, hath no particular acts demonſtrative of his ability, but is judged moſt by the event; which is ever but as it is taken: for who can tell, if a

[20] Virg. *Æn.* vi. 747. [21] Ovid, *Metam.* i. 521.

patient die or recover, or if a ſtate be preſerved or ruined, whether it be art or accident? And therefore many times the impoſtor is prized, and the man of virtue taxed. Nay, we ſee the weakneſs and credulity of men is ſuch, as they will often prefer a mountebank[22] or witch before a learned phyſician. And therefore the poets were clear-ſighted in diſcerning this extreme folly, when they made Æſculapius and Circe brother and ſiſter, both children of the ſun, as in the verſes,

> Ipſe repertorem medicinæ talis et artis
> Fulmine *Phœbigenam* Stygias detruſit ad undas:[23]

And again,

> Dives inacceſſos ubi *Solis filia* lucos, &c.[24]

For in all times, in the opinion of the multitude, witches and old women and impoſtors have had a competition with phyſicians. And what followeth? Even this, that phyſicians ſay to themſelves as Salomon expreſſeth it upon an higher occaſion; *If it befall to me as befalleth to the fools, why ſhould I labour to be more wiſe?*[25] And therefore I cannot much blame phyſicians, that they uſe commonly to intend ſome other art or practice, which they fancy more than their profeſſion. For you ſhall have of them antiquaries, poets, humaniſts, ſtateſmen, merchants, divines, and in every of theſe better ſeen than in their profeſſion; and no doubt upon this ground, that they find that mediocrity and excellency in their art maketh no

[22] *Montabank*—in the old editions—from *montambanco*, a quack-doctor. Holland, in his *Plutarch*, renders the word *mount-bank*. The word was confined in meaning to a quack in Bacon's day.

[23] Virg. *Æn.* vii. 772. [24] Ibid. vii. 11. [25] Eccles. ii. 15.

difference in profit or reputation towards their fortune; for the weakneſs of patients, and ſweetneſs of life, and nature of hope, maketh men depend upon phyſicians with all their defects. But nevertheleſs, theſe things which we have ſpoken of, are courſes begotten between a little occaſion, and a great deal of ſloth and default; for if we will excite and awake our obſervation, we ſhall ſee in familiar inſtances what a predominant faculty the *ſubtilty of ſpirit* hath over the *variety of matter or form:* nothing more variable than faces and countenances: yet men can bear in memory the infinite diſtinctions of them; nay, a painter with a few ſhells of colours, and the benefit of his eye and habit of his imagination, can imitate them all that ever have been, are, or may be, if they were brought before him: nothing more variable than voices; yet men can likewiſe diſcern them perſonally: nay, you ſhall have a buffoon or *pantomimus*,[26] who will expreſs as many as he pleaſeth. Nothing more variable than the differing ſounds of words; yet men have found the way to reduce them to a few ſimple letters. So that it is not the inſufficiency or incapacity of man's mind, but it is the remote ſtanding or placing thereof, that breedeth theſe mazes and incomprehenſions: for as the ſenſe afar off is full of miſtaking, but is exact at hand, ſo is it of the underſtanding; the remedy whereof is, not to quicken or ſtrengthen the organ,

[26] *Buffon*, or *pantomimus*, in the original; ſhowing that the words were newly imported into the Engliſh tongue. The *pantomime* was then a perſon, not a play.

but to go nearer to the object; and therefore there is no doubt but if the physicians will learn and use the true approaches and avenues of nature, they may assume as much as the poet saith:

> Et quoniam variant morbi, variabimus artes;
> Mille mali species, mille salutis erunt.[27]

Which that they should do, the nobleness of their art doth deserve; well shadowed by the poets, in that they made Æsculapius to be the son of the sun, the one being the fountain of life, the other as the second stream: but infinitely more honoured by the example of our Saviour, who made the body of man the object of His miracles, as the soul was the object of His doctrine. For we read not that ever He vouchsafed to do any miracle about honour or money, except that one for giving tribute to Cæsar;[28] but only about the preserving, sustaining, and healing the body of man.

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

Deficient in its Pathology.

The first is the discontinuance of the ancient and serious diligence of Hippocrates,[29] which used

[27] Ovid, *R. A.* 525. [28] Matt. xvii. 27.
[29] Hippocr. *De Epidemiis.*

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

In the inquiry which is made by Anatomy, I find much deficience: for they inquire of the *parts*, and their *ſubſtances*, *figures*, and *collocations*; but they inquire not of the *diverſities of the parts*, the *ſecrecies of the paſſages*, and the *ſeats or neſtlings of the humours*, nor much of the *footſteps and impreſſions of diſeaſes:* the reaſon of which omiſſion I ſuppoſe to be, becauſe the firſt inquiry may be ſatisfied in the view of one or a few anatomies: but the latter, being comparative and caſual, muſt ariſe from the view of many. And as to the diverſity of parts, there is no doubt but the facture or framing of the inward parts is as full of difference as the outward, and in that is the *cauſe continent* of many diſeaſes; which not being obſerved, they quarrel many times with humours, which are not in fault; the fault being in the very frame and And in Anatomy. *Anatomia comparata.*

mechanic of the part, which cannot be removed by medicine alterative, but must be accommodate and palliate by diets and medicines familiar. As for the passages and pores, it is true which was anciently noted, that the more subtle of them appear not in anatomies, because they are shut and latent in dead bodies, though they be open and manifest in live: which being supposed, though the inhumanity of *anatomia vivorum* was by Celsus justly reproved;[30] yet in regard of the great use of this observation, the inquiry needed not by him so slightly to have been relinquished altogether, or referred to the casual practices of surgery; but mought have been well diverted upon the dissection of beasts alive, which notwithstanding the dissimilitude of their parts, may sufficiently satisfy this inquiry. And for the humours, they are commonly passed over in anatomies as purgaments; whereas it is most necessary to observe, what cavities, nests, and receptacles the humours do find in the parts, with the differing kind of the humour so lodged and received. And as for the footsteps of diseases and their devastations of the inward parts, impost humations, exulcerations, discontinuations, putrefactions, consumptions, contractions, extensions, convulsions, dislocations, obstructions, repletions, together with all preternatural substances, as stones, carnosities, excrescences, worms, and the like; they ought to have been exactly observed by multitude of anatomies, and the contribution of men's several experiences, and care-

[30] *De Re Medicâ*, i. 1.

fully set down, both historically, according to the appearances, and artificially, with a reference to the diseases and symptoms which resulted from them, in case where the anatomy is of a defunct patient; whereas now, upon opening of bodies, they are passed over slightly and in silence.

Through despair of cures. *Inquisitio ulterior de morbis insanabilibus.*

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

De Euthanasia exteriore.

Nay, further, I esteem it the office of a physician not only to restore health, but to mitigate pain and dolours; and not only when such mitigation may conduce to recovery, but when it may serve to make a fair and easy passage: for it is no small felicity which Augustus Cæsar was wont to wish to himself, that same Euthanasia;[31] and which was especially noted in the death of Antoninus Pius, whose death was after the fashion and semblance of a kindly and pleasant sleep. So it is written of Epicurus, that after his disease was judged desperate, he drowned his stomach and senses with a large draught and ingurgitation of wine; where-

[31] Suet. *Vit. Aug.* c. 99.

upon the epigram was made, *Hinc Stygias ebrius hauſit aquas*;[32] he was not ſober enough to taſte any bitterneſs of the Stygian water. But the phyſicians contrariwiſe do make a kind of ſcruple and religion to ſtay with the patient after the diſeaſe is deplored; whereas, in my judgment, they ought both to inquire the ſkill and to give the attendances for the facilitating and aſſuaging of the pains and agonies of death.

Through confuſion of remedies. *Medicinæ experimentales.*

In the conſideration of the cures of diſeaſes, I find a deficience in the receipts of propriety,[33] reſpecting the particular cures and diſeaſes: for the phyſicians have fruſtrated the fruit of tradition and experience by their magiſtralities, in adding, and taking out, and changing *quid pro quo*, in their receipts at their pleaſures; commanding ſo over the medicine, as the medicine cannot command over the diſeaſes: for except it be treacle and *mithridatum*,[34] and of late *diaſcordium*, and a few more, they tie themſelves to

[32] ——— τὸν ἄκρατον
Ἔσπασεν, εἶτ' Ἀΐδην ψυχρὸν ἐπεσπάσατο.
Diog. Laert. x. 15. (*Vit. Epic.*)
No *ebrius* here; *pretenus* and *lætius* are ſuggeſted; but either emendation would rob the ſtory of its point.

[33] *Receipts of propriety*, i. e. proper or fit for each particular diſeaſe.

[34] *Treacle and mithridatum.* In the frontiſpiece to the ed. of Hippocrates, which I conſulted, Θηριακὸν and Μιθριδατικὸν were placed ſide by ſide as the chief remedies. By treacle (*theriacs*) is meant, not the ſyrup of ſugar, &c. but a compoſition of the parts of vipers; good for the cure of ſerpents' bites, and for other medicinal purpoſes. *Mithridate* (from king Mithridates' antidote) was a medicine of general uſe. "Was it not ſtrange, a phyſician ſhould decline exhibiting of Mithridate, becauſe it was a known medicine, and famous for its cures many ages ſince?" Boyle's Works, ii. p. 218. *Diaſcordium* is ſaid to have been invented by Fracaſtorius.

no receipts ſeverely and religiouſly: for as to the confections of ſale which are in the ſhops, they are for readineſs and not for propriety; for they are upon general intention of purging, opening, comforting, altering, and not much appropriate to particular diſeaſes: and this is the cauſe why empirics and old women are more happy many times in their cures than learned phyſicians, becauſe they are more religious in holding their medicines. Therefore here is the deficience which I find, that phyſicians have not, partly out of their own practice, partly out of the conſtant probations reported in books, and partly out of the traditions of empirics, ſet down and delivered over certain experimental medicines for the cure of particular diſeaſes, beſides their own conjectural and magiſtral deſcriptions. For as they were the men of the beſt compoſition in the ſtate of Rome, which either being conſuls inclined to the people, or being tribunes inclined to the ſenate; ſo in the matter we now handle, they be the beſt phyſicians, which being learned incline to the traditions of experience, or being empirics incline to the methods of learning.

In preparation of medicines, I do find ſtrange, eſpecially conſidering how mineral medicines have been extolled,[35] and that they are ſafer for the outward than inward parts, that no man hath ſought to make an imitation by art of natural baths and medicinable fountains: which nevertheleſs are con-

Through neglect of baths, &c. *Imitationes naturæ in Balneis et Aquis Medicinalibus.*

[35] By Paracelſus and his ſchool, who were chiefly diſtinguiſhed by their uſe of mineral medicines.

feſſed to receive their virtues from minerals: and not ſo only, but diſcerned and diſtinguiſhed from what particular mineral they receive tincture, as ſulphur, vitriol, ſteel, or the like; which nature, if it may be reduced to compoſitions of art, both the variety of them will be increaſed, and the temper of them will be more commanded.

Filum Medicinale, ſive de vicibus Medicinarum.

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

Through want of care and variety of medicines.

the way to heaven; but the truth of the direction must precede severity of observance.[36]

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

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

[36] The passage in the Latin on the prolongation of Life, which is inserted at this point, is most curious. It was a subject to which Bacon had evidently turned his attention; for he often refers to it, and had great hopes respecting it.

pian games are down long ſince, and the mediocrity of theſe things is for uſe; as for the excellency of them it ſerveth for the moſt part but for mercenary oſtentation.

(*δ.*) Arts of pleaſure ſenſual.

For *arts of pleaſure ſenſual*, the chief deficience in them is of laws to repreſs them.[37] For as it hath been well obſerved, that the arts which flouriſh in times while virtue is in growth, are *military;* and while virtue is in ſtate, are *liberal;* and while virtue is in declination, are *voluptuary;* ſo I doubt that this age of the world is ſomewhat upon the deſcent of the wheel. With arts voluptuary I couple practices joculary; for the deceiving of the ſenſes is one of the pleaſures of the ſenſes. As for games of recreation, I hold them to belong to civil life and education. And thus much of that particular human philoſophy which concerns the body, which is but the tabernacle of the mind.

De Augm. IV. 3. (*b.*) Of Human Philoſophy as it concerns the Mind, which regards, (*α.*) Its nature. (*β.*) Its functions. (*α.*) Nature of the Mind.

For Human Knowledge which concerns the Mind, it hath two parts; the one that inquireth of the ſubſtance or nature of the ſoul or mind, the other that inquireth of the faculties or functions thereof. Unto the firſt of theſe, the conſiderations of the original of the ſoul, whether it be native or adventive, and how far it is exempted from laws of matter, and of the immortality thereof, and many other points, do appertain: which have been not more laboriouſly inquired than variouſly reported; ſo as the travail therein taken ſeemeth to have been rather in a maze than in a way.

[37] This ſubject is very differently treated in the Latin. He there introduces muſic and painting, not as things to be repreſſed, but honoured.

But although I am of opinion that this knowledge may be more really and ſoundly inquired, even in nature, than it hath been; yet I hold that in the end it muſt be bounded by religion, or elſe it will be ſubject to deceit and deluſion: for as the ſubſtance of the ſoul in the creation was not extracted out of the maſs of heaven and earth by the benediction of a *producat* but was immediately inſpired from God: ſo it is not poſſible that it ſhould be (otherwiſe than by accident) ſubject to the laws of heaven and earth, which are the ſubject of philoſophy; and therefore the true knowledge of the nature and ſtate of the ſoul muſt come by the ſame inſpiration that gave the ſubſtance. Unto this part of knowledge touching the ſoul there be two appendices; which, as they have been handled, have rather vapoured forth fables than kindled truth, Divination and Faſcination.

(Appendix i.) Divination.

Divination hath been anciently and fitly divided into artificial and natural; whereof artificial is, when the mind maketh a prediction by argument, concluding upon ſigns and tokens; natural is when the mind hath a preſention by an internal power, without the inducement of a ſign. Artificial is of two ſorts; either when the argument is coupled with a derivation of cauſes, which is rational; or when it is only grounded upon a coincidence of the effect, which is experimental: whereof the latter for the moſt part is ſuperſtitious; ſuch as were the heathen obſervations upon the inſpection of ſacrifices, the flights of birds, the ſwarming of bees; and ſuch as was the Chaldean

aſtrology, and the like. For artificial divination, the ſeveral kinds thereof are diſtributed amongſt particular knowledges. The aſtronomer hath his predictions, as of conjunctions, aſpects, eclipſes, and the like. The phyſician hath his predictions of death, of recovery, of the accidents and iſſues of diſeaſes. The Politique hath his predictions; *O urbem venalem, et cito perituram, ſi emptorem invenerit!*[38] which ſtayed not long to be performed, in Sylla firſt, and after in Cæſar. So as theſe predictions are now impertinent, and to be referred over. But the divination which ſpringeth from the internal nature of the ſoul, is that which we now ſpeak of; which hath been made to be of two ſorts, primitive and by influxion. Primitive is grounded upon the ſuppoſition, that the mind, when it is withdrawn and collected into itſelf, and not diffuſed into the organs of the body, hath ſome extent and latitude of prenotion; which therefore appeareth moſt in ſleep, in ecſtacies, and near death, and more rarely in waking apprehenſions; and is induced and furthered by thoſe abſtinences and obſervances which make the mind moſt to conſiſt in itſelf. By influxion, is grounded upon the conceit that the mind, as a mirror or glaſs, ſhould take illumination from the foreknowledge of God and ſpirits:[39] unto which the ſame regiment doth likewiſe conduce. For the retiring of the mind within itſelf, is the ſtate which is moſt ſuſceptible of divine influxions; ſave that

[38] Sall. *Jug.* c. xxxv.

[39] Plat. *Tim.* 71. (Steph). *οἷον ἐν κατόπτρῳ δεχομένῳ τύπους*, and note the obſervation on *μαντικὴ*, at the ſame place.

it is accompanied in this caſe with a fervency and elevation, which the ancients noted by *fury*, and not with a repoſe and quiet, as it is in the other.

Faſcination is the power and act of imagination intenſive upon other bodies than the body of the imaginant, for of that we ſpake in the proper place: wherein the ſchool of Paracelſus, and the diſciples of pretended Natural Magic have been ſo intemperate, as they have exalted the power of the imagination to be much one with the power of miracle-working faith; others, that draw nearer to probability, calling to their view the ſecret paſſages of things, and ſpecially of the contagion that paſſeth from body to body, do conceive it ſhould likewiſe be agreeable to nature, that there ſhould be ſome tranſmiſſions and operations from ſpirit to ſpirit without the mediation of the ſenſes; whence the conceits have grown, now almoſt made civil, of the maſtering ſpirit, and the force of confidence, and the like. Incident unto this is the inquiry how to raiſe and fortify the imagination: for if the imagination fortified have power, then it is material to know how to fortify and exalt it. And herein comes in crookedly and dangerouſly a palliation of a great part of Ceremonial Magic. For it may be pretended that Ceremonies, Characters, and Charms, do work, not by any tacit or ſacramental contract with evil ſpirits, but ſerve only to ſtrengthen the imagination of him that uſeth it: as images are ſaid by the Roman church to fix the cogitations, and raiſe the devotions of them that pray before them. But for mine own judgment, if it be admitted that imagination hath power, and

(Appendix ii.) Faſcination.

that Ceremonies fortify imagination, and that they be uſed ſincerely and intentionally for that purpoſe;[40] yet I ſhould hold them unlawful, as oppoſing to that firſt edict which God gave unto man, *In ſudore vultus comedes panem tuum.*[41] For they propound thoſe noble effects, which God hath ſet forth unto man to be bought at the price of labour, to be attained by a few eaſy and ſlothful obſervances. Deficiences in theſe knowledges I will report none, other than the general deficience, that it is not known how much of them is verity, and how much vanity.[42]

De Aug. v. i. (β.) Of the functions of the mind. Theſe are, (A.) Intellectual. (B.) Moral.

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

[40] *Ceremonies.* The word does not now convey quite the ſame ſenſe; for in theſe paſſages Bacon refers to invocation of ſpirits: ſaying (as we gather alſo from the Latin) that they are illicit, though uſed only as phyſical remedies without any incantation.

[41] Gen. iii. 19.

[42] In the Latin, two deſiderata are noticed; Voluntary Motion, and Senſe and the Senſible: together with a curious diſcourſe on the Form of Light.

but the face towards Action hath the print of Good; which nevertheleſs are faces,

Quales decet eſſe ſororum.[43]

Neither is the Imagination ſimply and only a meſſenger; but is inveſted with, or at leaſtwiſe uſurpeth no ſmall authority in itſelf, beſides the duty of the meſſage. For it was well ſaid by Ariſtotle, *That the mind hath over the body that commandment, which the lord hath over a bondman; but that reaſon hath over the imagination that commandment which a magiſtrate hath over a free citizen;*[44] who may come alſo to rule in his turn. For we ſee that, in matters of Faith and Religion, we raiſe our Imagination above our Reaſon; which is the cauſe why Religion ſought ever acceſs to the mind by ſimilitude, types, parables, viſions, dreams. And again, in all perſuaſions that are wrought by eloquence, and other impreſſions of like nature, which do paint and diſguiſe the true appearance of things, the chief recommendation unto Reaſon is from the Imagination.[45] Nevertheleſs, becauſe I find not any ſcience that doth properly or fitly pertain to the Imagination, I ſee no cauſe to alter the former diviſion. For as for poeſy, it is rather a pleaſure or play of Imagination, than a work or duty thereof. And if it be a work, we ſpeak not now of ſuch parts of learning as the Imagination produceth, but of ſuch ſciences as handle and con-

[43] Ovid, *Metam.* ii. 14.

[44] Ariſtot. *Polit.* i. 5, 6; where ὄρεξις, *appetite*, is the term here rendered by *imagination*.

[45] *i. e.* Rhetoric aims at the feelings rather than at the cool judgment, and inflames Imagination till ſhe overpowers Reaſon.

ſider of the Imagination; no more than we ſhall ſpeak now of ſuch knowledges as reaſon produceth, for that extendeth to all philoſophy, but of ſuch knowledges as do handle and inquire the faculty of reaſon: ſo as poeſy had its true place. As for the power of the Imagination in nature, and the manner of fortifying the ſame, we have mentioned it in the doctrine *De Anima*, whereunto it moſt fitly belongeth. And laſtly, for Imaginative or Inſinuative Reaſon, which is the ſubject of Rhetoric, we think it beſt to refer it to the Arts of Reaſon. So therefore we content ourſelves with the former diviſion, that human philoſophy, which reſpecteth the faculties of the mind of man, hath two parts, rational and moral.

(A.) Intellectual.

The part of human philoſophy which is rational, is of all knowledges, to the moſt wits, the leaſt delightful; and ſeemeth but a net of ſubtilty and ſpinoſity. For as it was truly ſaid, that knowledge is *Pabulum animi*,[46] ſo in the nature of men's appetite to this food, moſt men are of the taſte and ſtomach of the Iſraelites in the deſert, that would fain have returned *ad ollas carnium*,[47] and were weary of manna; which, though it were celeſtial, yet ſeemed leſs nutritive and comfortable. So generally men taſte well knowledges that are drenched in fleſh and blood, civil hiſtory, morality, policy, about the which men's affections, praiſes,

[46] Cic. *Acad.* iv. *ad Lucullum*, 32. a. (Steph. 225.) Eſt enim animorum ingeniorumque naturale quoddam quaſi pabulum conſideratio contemplatioque naturæ. Or perhaps, *De Senect.* 14. Si habet aliquid tanquam *pabulum ſtudii atque doctrinæ*, nihil eſt otioſa ſenectute jucundius.

[47] Numb. xi. 4—6.

fortunes do turn and are converſant; but this ſame *lumen ſiccum* doth parch and offend moſt men's watery and ſoft natures. But, to ſpeak truly of things as they are in worth, Rational Knowledges are the keys of all other arts, for as Ariſtotle ſaith, aptly and elegantly, *That the hand is the inſtrument of inſtruments, and the mind is the form of forms:*[48] ſo theſe be truly ſaid to be the art of arts: neither do they only direct, but likewiſe confirm and ſtrengthen: even as the habit of ſhooting doth not only enable to ſhoot a nearer ſhoot, but alſo to draw a ſtronger bow.

Whoſe Arts are four.

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

De Aug. v. 2. (i.) Art of Invention. (a.) Of Arts is deficient.

Invention is of two kinds, much differing: the one of *Arts* and *Sciences;* and the other of *Speech* and *Arguments.* The former of theſe I do report deficient; which ſeemeth to me to be ſuch a deficience as if in the making of an inventory touching the eſtate of a defunct it ſhould be ſet down *that there is no ready money.* For as money will fetch all other commodities, ſo this knowledge is that which ſhould purchaſe all the reſt. And like as the Weſt Indies had never been diſcovered if the

[48] Ariſtot. *De Anima*, iii. 8.

uſe of the mariner's needle had not been firſt diſcovered, though the one be vaſt regions, and the other a ſmall motion; ſo it cannot be found ſtrange if ſciences be no farther diſcovered, if the art itſelf of invention and diſcovery hath been paſſed over.

Not provided by Logic.

That this part of knowledge is wanting, to my judgment ſtandeth plainly confeſſed; for firſt, Logic doth not pretend to invent ſciences, or the axioms of ſciences, but paſſeth it over with a *Cuique in ſua arte credendum.*[49] And Celſus acknowledgeth it gravely, ſpeaking of the Empirical and dogmatical ſects of phyſicians, *That medicines and cures were firſt found out, and then after the reaſons and cauſes were diſcourſed; and not the cauſes firſt found out, and by light from them the medicines and cures diſcovered.*[50] And Plato, in his *Theaetetus*, noteth well, *That particulars are infinite, and the higher generalities give no ſufficient direction: and that the pith of all ſciences, which maketh the artſman differ from the inexpert, is in the middle propoſitions, which in every particular knowledge are taken from tradition and experience.*[51] And therefore we ſee, that they which diſcourſe of the inventions and originals of things, refer them rather to chance than to art, and rather to beaſts, birds, fiſhes, ſerpents, than to men.

[49] Ellis and Spedding refer to Ariſt. *Anal. Pr.* i. 30; Mr. Markby to *Eth. Mag.* 1. i. 17. Ariſtotle declares (*Rhet.* 1. i. 1) that neither Rhetoric nor Logic has any proper ſubject-matter, both being purely inſtrumental; accordingly neither can "invent ſciences."

[50] *De Re Med.* i. 1.

[51] Not in the *Theætetus* certainly. As Bacon in the Latin introduces the quotation with *Plato non ſemel innuit*, he probably is not quoting any exact paſſage.

Dictamnum genitrix Cretæa carpit ab Ida,
Puberibus caulem foliis et flore comantem
Purpureo; non illa feris incognita capris
Gramina, cum tergo volucres hæsere sagittæ.[52]

So that it was no marvel, the manner of antiquity being to consecrate inventors, that the Egyptians had so few human idols in their temples, but almost all brute.

Omnigenumque Deum monstra, et latrator Anubis,
Contra Neptunum, et Venerem, contraque Minervam, &c.[53]

And if you like better the tradition of the Grecians, and ascribe the first inventions to men; yet you will rather believe that Prometheus first struck the flints, and marvelled at the spark, than that when he first struck the flints he expected the spark: and therefore we see the West Indian Prometheus[54] had no intelligence with the European, because of the rareness with them of flint, that gave the first occasion. So as it should seem, that hitherto men are rather beholding to a wild goat for surgery, or to a nightingale for music, or to the ibis for some part of physic, or to the pot-lid that flew open for artillery, or generally to chance,[55] or anything else, than to logic, for the invention of arts and sciences. Neither is the form of invention which Virgil describeth much other:

Ut varias usus meditando extunderet artes
Paulatim.[56]

For if you observe the words well, it is no other

[52] Virg. *Æn.* xii. 412. [53] Ibid. viii. 698.

[54] Refers, doubtless, to the rubbing of two sticks together to produce fire. Cf. *Nov. Org.* II. ii. 16.

[55] Τέχνη τύχην ἔστερξε, καὶ τύχη τέχνην. Arist. *Eth. Nic.* vi. 4.

[56] *Georg.* i. 133.

method than that which brute beasts are capable of, and do put in ure; which is a perpetual intending or practising some one thing, urged and imposed by an absolute necessity of conservation of being; for so Cicero saith very truly, *Usus uni rei deditus et naturam et artem sæpe vincit.*[57] And therefore if it be said of men,

Labor omnia vincit
Improbus, et duris urgens in rebus egestas![58]

it is likewise said of beasts,

Quis psittaco docuit suum χαῖρε?[59]

Who taught the raven in a drought to throw pebbles into a hollow tree, where she espied water, that the water might rise so as she might come to it? Who taught the bee to sail through such a vast sea of air, and to find the way from a field in flower a great way off to her hive? Who taught the ant to bite every grain of corn that she burieth in her hill, lest it should take root and grow? Add then the word *extundere*, which importeth the extreme difficulty, and the word *paulatim*, which importeth the extreme slowness, and we are where we were, even amongst the Egyptians' gods; there being little left to the faculty of reason, and nothing to the duty of art, for matter of invention.

Neither by Induction.

Secondly, the Induction which the Logicians speak of, and which seemeth familiar with Plato, (whereby the Principles of Sciences may be pretended to be invented, and so the middle propositi-

[57] Cic. *p. Corn. Balb.* xx. 45. [58] Virg. *Georg.* i. 145.
[59] Pers. *Prol.* 8, where it is *expedivit.*

tions by derivation from the Principles;) their form of induction, I ſay, is utterly vicious and incompetent: wherein their error is the fouler, becauſe it is the duty of Art to perfect and exalt Nature; but they contrariwiſe have wronged, abuſed, and traduced Nature. For he that ſhall attentively obſerve how the mind doth gather this excellent dew of knowledge, like unto that which the poet ſpeaketh of,

Aërei mellis cœleſtia dona,[60]

diſtilling and contriving it out of particulars natural and artificial, as the flowers of the field and garden, ſhall find that the mind of herſelf by nature doth manage and act an induction much better than they deſcribe it. For to conclude upon an enumeration of particulars, without inſtance contradictory, is no concluſion, but a conjecture; for who can aſſure, in many ſubjects, upon thoſe particulars which appear of a ſide, that there are not other on the contrary ſide which appear not? As if Samuel ſhould have reſted upon thoſe ſons of Jeſſe[61] which were brought before him, and failed of David, which was in the field.[62] And this form, to ſay truth, is ſo groſs, as it had not been poſſible for wits ſo ſubtile as have managed theſe things to have offered it to the world, but that they haſted to their theories and dogmaticals, and were imperious and ſcornful toward particulars; which their manner was to

[60] Virg. *Georg.* iv. 1.

[61] All the old editions ſpell the word *Iſſay*, and the *De Augm.* (as a genitive) *Iſai*.

[62] 1 Sam. xvi.

uſe but as *lictores* and *viatores*, for ſerjeants and whifflers, *ad ſummovendam turbam*, to make way and make room for their opinions, rather than in their true uſe and ſervice. Certainly it is a thing may touch a man with a religious wonder, to ſee how the footſteps of ſeducement are the very ſame in divine and human truth: for as in divine truth man cannot endure to become as a child; ſo in human, they reputed the attending the inductions whereof we ſpeak, as if it were a ſecond infancy or childhood.

Nor by Syllogiſm.

Thirdly, allow ſome principles or axioms were rightly induced, yet nevertheleſs certain it is that middle propoſitions cannot be deduced from them in ſubject of nature[63] by ſyllogiſm, that is, by touch and reduction of them to principles in a middle term. It is true that in ſciences popular, as moralities, laws, and the like, yea, and divinity, (becauſe it pleaſeth God to apply himſelf to the capacity of the ſimpleſt,) that form may have uſe; and in natural philoſophy likewiſe, by way of argument or ſatisfactory reaſon, *Quæ aſſenſum parit, operis effœta eſt:*[64] but the ſubtlety of nature and operations will not be enchained in thoſe bonds: for arguments conſiſt of propoſitions, and propoſitions of words; and words are but the current tokens or marks[65] of popular notions of things; which notions, if they be groſſly and variably col-

[63] In the Latin, *in rebus naturalibus.*

[64] This quotation is omitted in the Latin, nor can I find whence it comes; could it be a ſaying of Bacon's own?

[65] Teſſeræ. Ariſt. *Interp.* 1. i. 2—*τὰ τῶν ἐν τῇ ψυχῇ παθημάτων σύμβολα.*

lected out of particulars, it is not the laborious examination either of conſequence of arguments, or of the truth of propoſitions, that can ever correct that error, being, as the phyſicians ſpeak, in the firſt digeſtion: and therefore it was not without cauſe, that ſo many excellent philoſophers became Sceptics and Academics, and denied any certainty of knowledge or comprehenſion; and held opinion that the knowledge of man extended only to appearances and probabilities. It is true that in Socrates it was ſuppoſed to be but a form of irony, *Scientiam diſſimulando ſimulavit*,[66] for he uſed to diſable his knowledge, to the end to enhance his knowledge: like the humour of Tiberius in his beginnings, that would reign, but would not acknowledge ſo much:[67] and in the later Academy, which Cicero embraced, this opinion alſo of *acatalepſia*,[68] I doubt, was not held ſincerely: for that all thoſe which excelled in copie of ſpeech ſeem to have choſen that ſect, as that which was fitteſt to give glory to their eloquence and variable diſcourſes; being rather like progreſſes of pleaſure, than journeys to an end. But aſſuredly many ſcattered in both Academies did hold it in ſubtilty and integrity: but here was their chief error; they charged the deceit upon the ſenſes; which in my judgment, notwithſtanding all their cavillations, are very ſufficient to certify

[66] Cic. *Acad.* ii. 5. 15. Cf. Cic. *ad Att.* xiii. 19. 3. Theſe very words do not occur.

[67] Tac. *Ann.* i. 7. 11.

[68] Cic. *Acad.* ii. 6. 18, where *κατάληψις* only is mentioned. Cf. *Nov. Org.* i. 37.

and report truth, though not always immediately, yet by compariſon, by help of inſtrument, and by producing and urging ſuch things as are too ſubtile for the ſenſe to ſome effect comprehenſible by the ſenſe, and other like aſſiſtance. But they ought to have charged the deceit upon the weakneſs of the intellectual powers, and upon the manner of collecting and concluding upon the reports of the ſenſes. This I ſpeak, not to diſable the mind of man, but to ſtir it up to ſeek help: for no man, be he never ſo cunning or practiſed, can make a ſtraight line or perfect circle by ſteadineſs of hand, which may be eaſily done by help of a ruler or compaſs.

This part left to the future.

This part of invention, concerning the invention of ſciences, I purpoſe, if God give me leave, hereafter to propound, having digeſted it into two parts; whereof the one I term *experientia literata*, and the other *interpretatio naturæ:* 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.[69]

De Aug. v. 3. (β.) Of Speech (not true Invention).

The invention of ſpeech or argument is not properly an invention, for to *invent* is to diſcover that we know not, and not to recover or reſummon that which we already know: and the uſe of this invention is no other but out of the knowledge whereof our mind is already poſſeſſed to draw forth or call before us that which may be

[69] In the Latin, Bacon explains his *experientia literata*, which treats of methods of experiment; *Venatio Panis* he alſo ſtyles it. Cf. *Nov. Org.* i. 101. The *Interpretatio Naturæ* is the ſubject-matter of the *Nov. Org.*

pertinent to the purpoſe which we take into our conſideration. So as to ſpeak truly, it is no invention, but a remembrance or ſuggeſtion, with an application; which is the cauſe why the ſchools do place it after judgment, as ſubſequent and not precedent. Nevertheleſs, becauſe we do account it a chaſe as well of deer in an incloſed park as in a foreſt at large, and that it hath already obtained the name, let it be called invention: ſo as it be perceived and diſcerned, that the ſcope and end of this invention is readineſs and preſent uſe of our knowledge, and not addition or amplification thereof.

By Preparation.

To procure this ready uſe of knowledge there are two courſes, Preparation and Suggeſtion. The former of theſe ſeemeth ſcarcely a part of knowledge, conſiſting rather of diligence than of any artificial erudition. And herein Ariſtotle wittily, but hurtfully, doth deride the Sophiſts near his time, ſaying, *They did as if one that profeſſed the art of ſhoe-making ſhould not teach how to make a ſhoe, but only exhibit in a readineſs a number of ſhoes of all faſhions and ſizes.*[70] But yet a man might reply, that if a ſhoemaker ſhould have no ſhoes in his ſhop, but only work as he is beſpoken, he ſhould be weakly cuſtomed. But our Saviour, ſpeaking of divine knowledge, ſaith, *that the kingdom of heaven is like a good houſeholder, that bringeth forth both new and old ſtore:*[71] and we ſee the ancient writers of Rhetoric do give it in precept, "that pleaders ſhould have the

[70] Ariſtot. *Soph. El.* 34.

[71] Matt. xiii. 52.

Places, whereof they have moſt continual uſe, ready handled in all the variety that may be;" as that, "to ſpeak for the literal interpretation of the law againſt equity, and contrary; and to ſpeak for preſumptions and inferences againſt teſtimony, and contrary."[72] And Cicero himſelf, being broken unto it by great experience, delivereth it plainly, that whatſoever a man ſhall have occaſion to ſpeak of, if he will take the pains, he may have it in effect premeditate, and handled, *in theſi*;[73] ſo that when he cometh to a particular he ſhall have nothing to do, but to put to names and times and places, and ſuch other circumſtances of individuals. We ſee likewiſe the exact diligence of Demoſthenes; who, in regard of the great force that the entrance and acceſs into cauſes hath to make a good impreſſion, had ready framed a number of prefaces for orations and ſpeeches. All which authorities and precedents may overweigh Ariſtotle's opinion, that would have us change a rich wardrobe for a pair of ſhears.

But the nature of the collection of this proviſion or preparatory ſtore, though it be common both to Logic and Rhetoric, yet having made an entry of it here, where it came firſt to be ſpoken of, I think fit to refer over the further handling of it to Rhetoric.

By Suggeſtion.

The other part of invention, which I term ſuggeſtion, doth aſſign and direct us to certain *marks*,

[72] In the ed. 1605 theſe paſſages are printed in black letter, as quotations.

[73] Cic. *Orat.* 14 (46).

or *places*, which may excite our mind to return and produce such knowledge as it hath formerly collected, to the end we may make use thereof. Neither is this use, truly taken, only to furnish argument to dispute probably with others, but likewise to minister unto our judgment to conclude aright within ourselves. Neither may these Places serve only to apprompt our invention, but also to direct our inquiry. For a faculty of wise interrogating is half a knowledge. For as Plato saith, *Whosoever seeketh, knoweth that which he seeketh for in a general notion: else how shall he know it when he hath found it?*[74] and therefore the larger your anticipation is, the more direct and compendious is your search. But the same Places which will help us what to produce of that which we know already, will also help us, if a man of experience were before us, what questions to ask; or, if we have books and authors to instruct us, what points to search and revolve; so as I cannot report that this part of invention, which is that which the schools call *Topics*, is deficient.[75]

Of Topics.

Nevertheless, *Topics* are of two sorts, general and special.[76] The general we have spoken to; but the particular hath been touched by some, but rejected generally as inartificial and variable. But leaving the humour which hath reigned too much in the schools, which is, to be vainly subtle in a few things which are within their command, and

[74] Plato, *Menon*. 80.

[75] This passage is better arranged in the Latin. The paragraphs on Topics look as if they had been inserted as an afterthought.

[76] Cf. Aristot. *Rhet*. II. xxii. 16, 17.

to reject the reſt; I do receive particular Topics, (that is, places or directions of invention and inquiry in every particular knowledge,) as things of great uſe, being mixtures of Logic with the matter of ſciences; for in theſe it holdeth, *ars inveniendi adoleſcit cum inventis*;[77] for as in going of a way, we do not only gain that part of the way which is paſſed, but we gain the better ſight of that part of the way which remaineth: ſo every degree of proceeding in a ſcience giveth a light to that which followeth; which light if we ſtrengthen by drawing it forth into queſtions or places of inquiry, we do greatly advance our purſuit.[78]

De Augm. v. 4. (ii.) Art of Judgment. In Induction.

Now we paſs unto the arts of Judgment, which handle the natures of Proofs and Demonſtrations; which as to Induction hath a coincidence with Invention. For in all inductions, whether in good or vicious form, the ſame action of the mind which inventeth, judgeth; all one as in the ſenſe. But otherwiſe it is in proof by ſyllogiſm; for the proof being not immediate, but by mean, the invention of the mean is one thing, and the judgment of the conſequence is another; the one exciting only, the other examining. Therefore for the real and exact form of judgment, we refer ourſelves to that which we have ſpoken of *interpretation of nature*.[79]

By Syllogiſm.

For the other judgment by Syllogiſm, as it is a thing moſt agreeable to the mind of man, ſo it

[77] Cf. *Nov. Org.* i. 130.

[78] In the Latin an inquiry *de gravi et levi* is here added as a Topic.

[79] In the Latin, legitimam (Inductionis formam) ad Novum Organum remittimus.

hath been vehemently and excellently laboured; for the nature of man doth extremely covet to have ſomewhat in his underſtanding fixed and immovable, and as a reſt and ſupport of the mind. And therefore as Ariſtotle endeavoureth to prove, that in all motion there is ſome point quieſcent;[80] and as he elegantly expoundeth the ancient fable of Atlas, that ſtood fixed, and bare up the heaven from falling, to be meant of the poles or axle-tree of heaven, whereupon the converſion is accompliſhed; ſo aſſuredly men have a deſire to have an *Atlas* or axle-tree within to keep them from fluctuation, which is like to a perpetual peril of falling; therefore men did haſten to ſet down ſome principles about which the variety of their diſputations might turn.

Judgment defined.

So then this art of Judgment is but the reduction of propoſitions to principles in a middle term: the principles to be agreed by all and exempted from argument; the middle term to be elected at the liberty of every man's invention; the reduction to be of two kinds, direct and inverted; the one when the propoſition is reduced to the principle, which they term a *probation oſtenſive;* the other, when the contradictory of the propoſition is reduced to the contradictory of the principle, which is that which they call *per incommodum*, or *preſſing an abſurdity;* the number of middle terms to be as the propoſition ſtandeth degrees more or leſs removed from the principle.[81]

[80] Ariſtot. *De Motu Anim.* 3. [81] Cf. Sanderſon, *Logic*, iii. 5.

Its methods. (*a.*) Of direction. (Analytics.)

But this art hath two ſeveral methods of doctrine, the one by way of direction, the other by way of caution: the former frameth and ſetteth down a true form of conſequence, by the variations and deflections from which errors and inconſequences may be exactly judged. Toward the compoſition and ſtructure of which form, it is incident to handle the parts thereof, which are propoſitions, and the parts of propoſitions, which are ſimple words: and this is that part of Logic which is comprehended in the *Analytics*.

(*b.*) Of caution. (Elenches.)

The ſecond method of doctrine was introduced for expedite uſe and aſſurance ſake; diſcovering the more ſubtle forms of ſophiſms and illaqueations with their redargutions, which is that which is termed *elenches*. For although in the more groſs ſorts of fallacies it happeneth, as Seneca maketh the compariſon well, as in juggling feats, which, though we know not how they are done, yet we know well it is not as it ſeemeth to be;[82] yet the more ſubtle ſort of them doth not only put a man beſide his anſwer, but doth many times abuſe his judgment.

Elenches, how treated by Ariſtotle and Plato.

This part concerning *elenches* is excellently handled by Ariſtotle in precept, but more excellently by Plato in example, not only in the perſons of the Sophiſts, but even in Socrates himſelf; who, profeſſing to affirm nothing, but to infirm that which was affirmed by another, hath exactly expreſſed all the forms of objection, fallacy, and

[82] Sen. *Epiſt. Mor.* 45. Sine noxa decipiunt, quomodo præſtigiatorum acetabula et calculi, in quibus fallacia ipſa delectat.

redargution.[83] And although we have ſaid that the uſe of this doctrine is for redargution, yet it is manifeſt the degenerate and corrupt uſe is for caption and contradiction, which paſſeth for a great faculty, and no doubt is of very great advantage: though the difference be good which was made between orators and ſophiſters, that the one is as the greyhound, which hath his advantage in the race, and the other as the hare, which hath her advantage in the turn, ſo as it is the advantage of the weaker creature.

Capable of further extenſion.

But yet further, this doctrine of *elenches* hath a more ample latitude and extent than is perceived; namely, unto divers parts of knowledge; whereof ſome are laboured and others omitted. For firſt, I conceive, though it may ſeem at firſt ſomewhat ſtrange, that that part which is variably referred, ſometimes to logic, ſometimes to metaphyſics, touching the common adjuncts of eſſences, is but an *elench*; for the great ſophiſm of all ſophiſms being equivocation, or ambiguity of words and phraſe, (eſpecially of ſuch words as are moſt general, and intervene in every inquiry,) it ſeemeth to me that the true and fruitful uſe, leaving vain ſubtilties and ſpeculations, of the inquiry of *majority*, *minority*, *priority*, *poſteriority*, *identity*, *diverſity*, *poſſibility*, *act*, *totality*, *parts*, *exiſtence*, *privation*, and the like, are but wiſe cautions againſt the ambiguities of ſpeech. So again the diſtribution of things into certain tribes, which we call *catego-*

[83] Cf. Plato's account of Socrates in the opening of the *Theætetus*.

ries or *predicaments*, are but cautions againſt the confuſion of *definitions* and *diviſions*.[84]

Imagination affects judgment.

Secondly, there is a ſeducement that worketh by the ſtrength of the impreſſion, and not by the ſubtilty of the illaqueation; not ſo much perplexing the reaſon, as overruling it by power of the imagination. But this part I think more proper to handle when I ſhall ſpeak of rhetoric.

Fallacies in the mind.

But laſtly, there is yet a much more important and profound kind of fallacies in the mind of man, which I find not obſerved or inquired at all,[85] and think good to place here, as that which of all others appertaineth moſt to rectify judgment: the force whereof is ſuch, as it doth not dazzle or ſnare the underſtanding in ſome particulars, but doth more generally and inwardly infect and corrupt the ſtate thereof. For the mind of man is far from the nature of a clear and equal glaſs, wherein the beams of things ſhould reflect according to their true incidence; nay, it is rather like an enchanted glaſs, full of ſuperſtition and impoſture, if it be not delivered and reduced. For this purpoſe, let us conſider the falſe appearances that are impoſed upon us by the general nature of the mind,[86] beholding them in an example or two; as firſt, in that inſtance which is the root of all ſuperſtition, namely, *That to the nature of the mind of all men it is conſonant for the affirmative or active to affect more than the negative or pri-*

[84] Ariſt. *Categ.*

[85] This is the doctrine of "Idols," expanded in the Latin, and ſtill more in the *Nov. Org.* i. 39—68.

[86] "Idols" of the Tribe, *Nov. Org.* i. 24—31.

vative: ſo that a few times hitting or preſence, countervails oft-times failing or abſence; as was well anſwered by Diagoras to him that ſhowed him in Neptune's temple the great number of pictures of ſuch as had eſcaped ſhipwreck, and had paid their vows to Neptune, ſaying, *Adviſe now, you that think it folly to invocate Neptune in tempeſt: Yea, but,* ſaith Diagoras, *where are they painted that are drowned?*[87] Let us behold it in another inſtance, namely, *That the ſpirit of man, being of an equal and uniform ſubſtance, doth uſually ſuppoſe and feign in nature a greater equality and uniformity than is in truth.* Hence it cometh, that the mathematicians cannot ſatisfy themſelves except they reduce the motions of the celeſtial bodies to perfect circles, rejecting ſpiral lines, and labouring to be diſcharged of eccentrics.[88] Hence it cometh, that whereas there are many things in nature as it were *monodica, ſui juris;*[89] yet the cogitations of man do feign unto them *relatives, parallels,* and *conjugates,* whereas no ſuch thing is; as they have feigned an element of fire, to keep ſquare with earth, water, and air, and the like: nay, it is not credible, till it be opened, what a number of fictions and fancies the ſimilitude of human actions and arts, together with the making of man *communis menſura,* have brought into na-

[87] Cic. *De Nat. Deor.* iii. 37.

[88] Bacon's warning here is good, though his illuſtration was ſoon ſignally confuted by the promulgation of Kepler's laws. See *Nov. Org.* i. 45.

[89] He ſeems to think the derivation of this term is μόνος and δίκη.

tural philoſophy; not much better than the hereſy of the Anthropomorphites,[90] bred in the cells of groſs and ſolitary monks, and the opinion of Epicurus, anſwerable to the ſame in heatheniſm, who ſuppoſed the Gods to be of human ſhape. And therefore Velleius the Epicurean needed not to have aſked, why God ſhould have adorned the heavens with ſtars, as if he had been an *ædilis*, one that ſhould have ſet forth ſome magnificent ſhows or plays.[91] For if that great Work-maſter had been of a human diſpoſition, he would have caſt the ſtars into ſome pleaſant and beautiful works and orders, like the frets in the roofs of houſes; whereas one can ſcarce find a poſture in ſquare, or triangle, or ſtraight line, amongſt ſuch an infinite number; ſo differing a harmony there is between the ſpirit of man and the ſpirit of nature.

Phantoms of the Cave.

Let us conſider again the falſe appearances impoſed upon us by every man's own individual nature and cuſtom,[92] in that feigned ſuppoſition that Plato[93] maketh of the cave: for certainly if a child were continued in a grot or cave under the earth until maturity of age, and came ſuddenly abroad, he would have ſtrange and abſurd imaginations. So in like manner, although our perſons live in the view of heaven, yet our ſpirits are

[90] Anthropomorphites, a ſect which flouriſhed in the fourth and tenth centuries; their diſtinctive doctrine was that as God is ſaid to have made man in his own Image, therefore the Deity is clothed in human ſhape. See Moſheim, *Eccl. Hiſt.* Cent. x. part ii. ch. 5.

[91] Cic. *De Nat. Deor.* i. 9.

[92] "Idols" of the Cave, *Nov. Org.* i. 31—35.

[93] Plato, *De Rep.* lib. vii. *init.*

included in the caves of our own complexions and cuſtoms, which miniſter unto us infinite errors and vain opinions, if they be not recalled to examination. But hereof we have given many examples in one of the errors, or peccant humours, which we ran briefly over in our firſt book.

And laſtly, let us conſider the falſe appearances that are impoſed upon us by words, which are framed and applied according to the conceit and capacities of the vulgar ſort: and although we think we govern our words, and preſcribe it well, *loquendum ut vulgus, ſentiendum ut ſapientes;* yet certain it is that words, as a Tartar's bow, do ſhoot back upon the underſtanding of the wiſeſt, and mightily entangle and pervert the judgment. So as it is almoſt neceſſary in all controverſies and diſputations to imitate the wiſdom of the mathematicians, in ſetting down in the very beginning the definitions of our words and terms, that others may know how we accept and underſtand them, and whether they concur with us or no. For it cometh to paſs for want of this, that we are ſure to end there where we ought to have begun, which is, in queſtions and differences about words. To conclude therefore, it muſt be confeſſed that it is not poſſible to divorce ourſelves from theſe fallacies and falſe appearances, becauſe they are inſeparable from our nature and condition of life; ſo yet nevertheleſs the caution of them, (for all elenches, as was ſaid, are but cautions,) doth extremely import the true conduct of human

Of the Market-place.

Elenchi magni, ſive de Idolis animi humani nativis et adventitiis.

judgment. The particular elenches or cautions againſt theſe three falſe appearances, I find altogether deficient.

Reference of proofs to their ſubjects deficient.

There remaineth one part of judgment of great excellency, which to mine underſtanding is ſo ſlightly touched, as I may report that alſo deficient; which is the application of the differing kinds of proofs to the differing kinds of ſubjects; for there being but four kinds of demonſtrations, that is, *by the immediate conſent of the mind or ſenſe*, by *induction*, by *ſyllogiſm*, and by *congruity* (which is that which Ariſtotle calleth *demonſtration in orb or circle*,[94] and not *a notioribus*;) every of theſe hath certain ſubjects in the matter of ſciences, in which reſpectively they have chiefeſt uſe; and certain others, from which reſpectively they ought to be excluded; and the rigour and curioſity in requiring the more ſevere proofs in ſome things, and chiefly the facility in contenting ourſelves with the more remiſs proofs in others, hath been amongſt the greateſt cauſes of detriment and hinderance to knowledge. The diſtributions and aſſignations of demonſtrations, according to the analogy of ſciences, I note as deficient.

De Analogia Demonſtrationum.

De Augm. v. 5. (iii.) Art of cuſtody. (*a.*) By Writing.

The cuſtody or retaining of knowledge is either in writing or memory; whereof writing hath two parts, the nature of the character, and the order of the entry; for the art of characters, or other viſible notes of words or things, it hath neareſt conjugation with grammar; and therefore I refer it to the due place: for the diſpoſition and collo-

[94] Ariſtot. *Analyt. Pr.* ii. 5. 1.

cation of that knowledge which we preſerve in writing, it conſiſteth in a good digeſt of common-places; wherein I am not ignorant of the prejudice imputed to the uſe of common-place books, as cauſing a retardation of reading, and ſome ſloth or relaxation of memory. But becauſe it is but a counterfeit thing in knowledges to be forward and pregnant, except a man be deep and full, I hold the entry of common-places to be a matter of great uſe and eſſence in ſtudying, as that which aſſureth copie of invention, and contracteth judgment to a ſtrength. But this is true, that of the methods of common-places that I have ſeen, there is none of any ſufficient worth; all of them carrying merely the face of a ſchool, and not of a world; and referring to vulgar matters and pedantical diviſions, without all life or reſpect to action.

(*b.*) By Memory:—ill-handled. The Art of Memory bad.

For the other principal part of the cuſtody of knowledge, which is Memory, I find that faculty in my judgment weakly inquired of. An art[95] there is extant of it; but it ſeemeth to me that there are better precepts than that art, and better practices of that art than thoſe received. It is certain the art, as it is, may be raiſed to points of oſtentation prodigious: but in uſe, as it is now managed, it is barren, (not burdenſome, nor dangerous to natural memory, as is imagined, but barren,) that is, not dexterous to be applied to the ſerious uſe of buſineſs and occaſions. And there-

[95] Cf. Ariſtot. *De Mem.* See the article in the *Encycl. Britannica*, "On Mnemonics." Cf. Cicero, *De Rhet.* iii. and *De Orat.* ii.

fore I make no more eſtimation of repeating a great number of names or words upon once hearing, or the pouring forth of a number of verſes or rhymes, *ex tempore*, or the making of a ſatirical ſimile of everything, or the turning of everything to a jeſt, or the falſifying or contradicting of everything by cavil, or the like, (whereof in the faculties of the mind there is great copie, and ſuch as by device and practice may be exalted to an extreme degree of wonder,) than I do of the tricks of tumblers, *funambules*, *baladines*:[96] the one being the ſame in the mind that the other is in the body, matters of ſtrangeneſs without worthineſs.

Art of Memory reſts on (α.) Prenotion; (β.) Emblem.

This art of memory is but built upon two intentions; the one prenotion, the other emblem. Prenotion diſchargeth the indefinite ſeeking of that we would remember, and directeth us to ſeek in a narrow compaſs, that is, ſomewhat that hath congruity with our place of memory. Emblem reduceth conceits intellectual to images ſenſible, which ſtrike the memory more; out of which axioms may be drawn much better practice than that in uſe; and beſides which axioms, there are divers moe touching help of memory, not inferior to them. But I did in the beginning diſtinguiſh, not to report thoſe things deficient, which are but only ill managed.

De Augm. VI. I. (iv.) Art of Tradition.

There remaineth the fourth kind of rational knowledge, which is tranſitive, concerning the expreſſing or transferring our knowledge to others;

[96] *Ballerino* is Italian for a dancer.

which I will term by the general name of tradition or delivery. Tradition hath three parts; the firſt concerning the organ of tradition: the ſecond concerning the method of tradition; and the third concerning the illuſtration of tradition.

For the organ of tradition, it is either ſpeech or writing: for Ariſtotle ſaith well, *Words are the images of cogitations, and letters are the images of words;*[97] but yet it is not of neceſſity that cogitations be expreſſed by the medium of words. For *whatſoever is capable of ſufficient differences, and thoſe perceptible by the ſenſe, is in nature competent to expreſs cogitations.* And therefore we ſee in the commerce of barbarous people, that underſtand not one another's language, and in the practice of divers that are dumb and deaf, that men's minds are expreſſed in geſtures, though not exactly, yet to ſerve the turn. And we underſtand further, that it is the uſe of China, and the kingdoms of the high Levant,[98] to write in characters real, which expreſs neither letters nor words in groſs, but things or notions; inſomuch as countries and provinces, which underſtand not one another's language, can nevertheleſs read one another's writings, becauſe the characters are accepted more generally than the languages do extend; and therefore they have a vaſt multitude of characters, as many, I ſuppoſe, as radical words.

(*a.*) Its organ; ſpeech or writing.

[97] Ariſtot. *De Interpret.* i. 2.

[98] "In China et provinciis ultimi Orientis." (*De Augm.*) See a very intereſting note on theſe paragraphs in Ellis and Spedding's ed. of the *De Augm.* vi. 1.

Theſe notes of cogitations are of two ſorts; the one when the note hath ſome ſimilitude or congruity with the notion: the other *ad placitum*, having force only by contract or acceptation. Of the former ſort are hieroglyphics and geſtures. For as to hieroglyphics, things of ancient uſe, and embraced chiefly by the Egyptians, one of the moſt ancient nations, they are but as continued impreſſes and emblems. And as for geſtures, they are as tranſitory hieroglyphics, and are to hieroglyphics as words ſpoken are to words written, in that they abide not; but they have evermore, as well as the other, an affinity with the things ſignified: as Periander, being conſulted with how to preſerve a tyranny newly uſurped, bid the meſſenger attend and report what he ſaw him do; and went into his garden and topped all the higheſt flowers: ſignifying, that it conſiſted in the cutting off and keeping low of the nobility and grandees.[99] *Ad placitum*, are the characters real before mentioned, and words: although ſome have been willing by curious inquiry, or rather by apt feigning to have derived impoſition of names from reaſon and intendment; a ſpeculation elegant, and, by reaſon it ſearcheth into antiquity, reverent; but ſparingly mixed with truth, and of ſmall fruit.

De notis rerum. This portion of knowledge, touching the notes of

[99] Ariſtot. *Polit.* iii. 13, and *Herod.* v. 92. Cf. alſo Livy, i. 54, where the ſtory is transferred to Tarquinius Superbus. *Grandees*, in ed. 1605, *grandes*; the word being not yet naturalized in the Engliſh language. According to Richardſon, Burton (the Anatomy was publiſhed in 1624) ſpells it *grandy*. In my copy of the firſt edition I have not met with the word.

things and cogitations in general, I find not inquired, but deficient. And although it may ſeem of no great uſe, conſidering that words and writings by letters do far excel all the other ways; yet becauſe this part concerneth, as it were, the mint of knowledge, (for words are the tokens current and accepted for conceits, as moneys are for values, and that it is fit men be not ignorant that moneys may be of another kind than gold and ſilver,) I thought good to propound it to better inquiry.

Concerning ſpeech and words, the conſideration of them hath produced the ſcience of grammar: for man ſtill ſtriveth to reintegrate himſelf in thoſe benedictions, from which by his fault he hath been deprived; and as he hath ſtriven againſt the firſt general curſe by the invention of all other arts, ſo hath he ſought to come forth of the ſecond general curſe, which was the confuſion of tongues, by the art of grammar; whereof the uſe in a mother tongue[1] is ſmall, in a foreign tongue more; but moſt in ſuch foreign tongues as have ceaſed to be vulgar tongues, and are turned only to learned tongues. The duty of it is of two natures; the one popular, which is for the ſpeedy and perfect attaining languages, as well for intercourſe of ſpeech as for underſtanding of authors; the other philoſophical, examining the power and nature of words, as they are the footſteps and prints of reaſon: which kind of analogy between words and reaſon is han-

Speech has produced grammar.

[1] The Latin is "linguis quibuſque vernaculis." Ed. 1605 has *in another tongue*, which is clearly a miſprint—the antitheſis lying between a "vernacular" or mother tongue, and a foreign language.

dled *ſparſim*, brokenly, though not entirely; and therefore I cannot report it deficient, though I think it very worthy to be reduced into a ſcience by itſelf.

The accidents of words.

Unto grammar alſo belongeth, as an appendix, the conſideration of the accidents of words; which are meaſure, ſound, and elevation or accent, and the ſweetneſs and harſhneſs of them; whence hath iſſued ſome curious obſervations in rhetoric, but chiefly poeſy, as we conſider it in reſpect of the verſe and not of the argument; wherein though men in learned tongues do tie themſelves to the ancient meaſures, yet in modern languages it ſeemeth to me as free to make new meaſures of verſes as of dances: for a dance is a meaſured pace, as a verſe is a meaſured ſpeech. In theſe things the ſenſe is better judge than the art;

> Cœnæ fercula noſtræ
> Mallem convivis quam placuiſſe cocis.[2]

And of the ſervile expreſſing antiquity in an unlike and an unfit ſubject, it is well ſaid, *Quod tempore antiquum videtur, id incongruitate eſt maxime novum.*[3]

Ciphers.

For ciphers, they are commonly in letters or alphabets, but may be in words. The kinds of ciphers, beſides the ſimple ciphers, with changes, and intermixtures of nulls and non-ſignificants, are many, according to the nature or rule of the infolding, wheel-ciphers, key-ciphers, doubles, &c.[4]

[2] Martial. *Epig.* ix. 82.

[3] This quotation, which is omitted in the Latin, is only another form and application of Bacon's favourite "Antiquitas ſæculi, juventus mundi."

[4] In the Latin a ſpecimen of a cipher (invented by himſelf when

But the virtues of them, whereby they are to be preferred, are three; that they be not laborious to write and read; that they be impoſſible to decipher; and, in ſome caſes, that they be without ſuſpicion. The higheſt degree whereof is to write *omnia per omnia;* which is undoubtedly poſſible, with a proportion quintuple at moſt of the writing infolding to the writing infolded, and no other reſtraint whatſoever. This art of ciphering hath for relative an art of deciphering, by ſuppoſition unprofitable, but, as things are, of great uſe. For ſuppoſe that ciphers were well managed, there be multitudes of them which exclude the decipherer. But in regard of the rawneſs and unſkilfulneſs of the hands through which they paſs, the greateſt matters are many times carried in the weakeſt ciphers.

In the enumeration of theſe private and retired arts, it may be thought I ſeek to make a great muſter-roll of ſciences, naming them for ſhow and oſtentation, and to little other purpoſe. But let thoſe which are ſkilful in them judge whether I bring them in only for appearance, or whether in that which I ſpeak of them, though in few marks, there be not ſome ſeed of proficience. And this muſt be remembered, that as there be many of great account in their countries and provinces, which, when they come up to the ſeat of the eſtate, Concluſion.

a young man at Paris) is introduced, to ſhow how the art of writing *omnia per omnia* can be attained to. See alſo Encycl. Brit. verb. *Cipher*. Trithemius, Bapt. Porta, and others, wrote treatiſes on this art; and it is worth remembering that the Stuarts made conſiderable political uſe of it.

are but of mean rank and ſcarcely regarded; ſo theſe arts, being here placed with the principal and ſupreme ſciences, ſeem petty things; yet to ſuch as have choſen them to ſpend their labours and ſtudies in them, they ſeem great matters.

De Aug. vi. 2. (*b.*) Method of Tradition.

For the Method of Tradition, I ſee it hath moved a controverſy in our time.[5] But as in civil buſineſs, if there be a meeting, and men fall at words, there is commonly an end of the matter for that time, and no proceeding at all; ſo in learning, where there is much controverſy, there is many times little inquiry. For this part of knowledge of Method ſeemeth to me ſo weakly inquired as I ſhall report it deficient.

Method, a part of Logic.

Method hath been placed, and that not amiſs, in Logic, as a part of Judgment;[6] for as the doctrine of Syllogiſms comprehendeth the rules of Judgment upon that which is invented, ſo the doctrine of Method containeth the rules of Judgment upon that which is to be delivered; for Judgment precedeth Delivery, as it followeth Invention. Neither is the Method or the nature of the tradition material only to the uſe of knowledge, but likewiſe to the progreſſion of knowledge: for ſince the labour and life of one man cannot attain to perfection of knowledge, the wiſdom of the tradition is that which inſpireth the felicity of con-

[5] Between Ramus, whoſe method was one of perpetual dichotomies, and others.

[6] Not ſo in the uſual text-books—Sanderſon, iii. 30, 31, and Aldrich, chap. vi. place it under Diſcourſe; and it is defined as "Ratio ita diſponendi partes alicujus diſciplinæ vel tractationis, ut facillime a nobis integra diſcatur."

tinuance and proceeding. And therefore the moſt real diverſity of method, is of Method referred to uſe, and Method referred to progreſſion: whereof the one may be termed Magiſtral, and the other of Probation.

The latter whereof ſeemeth to be *via deſerta et intercluſa*. For as knowledges are now delivered, there is a kind of contract of error between the deliverer and the receiver: for he that delivereth knowledge, deſireth to deliver it in ſuch form as may be beſt believed, and not as may be beſt examined; and he that receiveth knowledge, deſireth rather preſent ſatisfaction, than expectant inquiry; and ſo rather not to doubt, than not to err: glory making the author not to lay open his weakneſs, and ſloth making the diſciple not to know his ſtrength. Of Probation, or for progreſſion (deficient.)

But knowledge that is delivered as a thread to be ſpun on, ought to be delivered and intimated, if it were poſſible, in the ſame method wherein it was invented: and ſo is it poſſible of knowledge induced. But in this ſame anticipated and prevented knowledge, no man knoweth how he came to the knowledge which he hath obtained. But yet nevertheleſs, *ſecundum majus et minus*, a man may reviſit and deſcend unto the foundations of his knowledge and conſent; and ſo tranſplant it into another, as it grew in his own mind. For it is in knowledges as it is in plants: if you mean to uſe the plant, it is no matter for the roots; but if you mean to remove it to grow, then it is more aſſured to reſt upon roots than ſlips: ſo the deli- Magiſtral, or for uſe.

very of knowledges, as it is now used, is as of fair bodies of trees without the roots; good for the carpenter, but not for the planter. But if you will have sciences grow, it is less matter for the shaft or body of the tree, so you look well to the taking up of the roots: of which kind of delivery the method of the mathematics, in that subject, hath some shadow: but generally I see it neither put in use[7] nor put in inquisition, and therefore note it for deficient.

De Methodo sincera, sive ad filios scientiarum.

Enigmatical.

Another diversity of Method there is, which hath some affinity with the former, used in some cases by the discretion of the ancients, but disgraced since by the impostures of many vain persons, who have made it as a false light for their counterfeit merchandises; and that is, enigmatical and discloséd.[8] The pretence whereof 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.

Compared with Aphorisms.

Another diversity of Method, whereof the consequence is great, is the delivery of knowledge in Aphorisms, or in Methods; wherein we may observe that it hath been too much taken into custom, out of a few axioms or observations upon any subject, to make a solemn and formal art, filling it

[7] I have read *use* for *ure*. For the Latin is *usus*, and the word *ure* is a rare one. Richardson's examples are all from Chaucer. The meaning of both words is the same.

[8] Corresponds to the scholastic "Methodus ἀκροαματικὴ et ἐξωτερικὴ," Aldrich, *Logic*, vi. Bacon uses these terms in the Latin.

with ſome diſcourſes, and illuſtrating it with examples, and digeſting it into a ſenſible Method.

But the writing in aphoriſms hath many excellent virtues, whereto the writing in Method doth not approach. For firſt, it trieth the writer, whether he be ſuperficial or ſolid: for Aphoriſms, except they ſhould be ridiculous, cannot be made but of the pith and heart of ſciences; for diſcourſe of illuſtration is cut off: recitals of examples are cut off; diſcourſe of connection and order is cut off; deſcriptions of practice are cut off. So there remaineth nothing to fill the Aphoriſms but ſome good quantity of obſervation: and therefore no man can ſuffice, nor in reaſon will attempt to write Aphoriſms, but he that is ſound and grounded. But in Methods,

> Tantum ſeries juncturaque pollet,
> Tantum de medio ſumptis accedit honoris;[9]

as a man ſhall make a great ſhew of an art, which, if it were disjointed, would come to little. Secondly, methods are more fit to win conſent or belief, but leſs fit to point to action; for they carry a kind of demonſtration in orb or circle, one part illuminating another, and therefore ſatisfy; but particulars, being diſperſed, do beſt agree with diſperſed directions. And laſtly, Aphoriſms, repreſenting a knowledge broken, do invite men to inquire farther; whereas Methods, carrying the ſhow of a total, do ſecure men, as if they were at fartheſt.

Another diverſity of Method, which is likewiſe of great weight, is the handling of knowledge by

By aſſertions and their proofs, or by

[9] Hor. *Ep. ad Pis.* 242.

queſtions and anſwers.

aſſertions and their proofs, or by queſtions and their determinations; the latter kind whereof, if it be immoderately followed, is as prejudicial to the proceeding of learning, as it is to the proceeding of an army to go about to beſiege every little fort or hold. For if the field be kept, and the ſum of the enterpriſe purſued, thoſe ſmaller things will come in of themſelves: indeed a man would not leave ſome important piece enemy at his back.[10] In like manner, the uſe of confutation in the delivery of ſciences ought to be very ſparing; and to ſerve to remove ſtrong preoccupations and prejudgments, and not to miniſter and excite diſputations and doubts.

Differs according to ſubject-matter.

Another diverſity of Method is, according to the ſubject or matter which is handled; for there is a great difference in delivery of the mathematics, which are moſt abſtracted of knowledges, and policy, which is the moſt immerſed: and howſoever contention hath been moved touching a uniformity of method in multiformity of matter, yet we ſee how that opinion, beſides the weakneſs of it, hath been of ill deſert towards learning, as that which taketh the way to reduce learning to certain empty and barren generalities; being but the very huſks and ſhells of ſciences, all the kernel being forced out and expulſed with the torture and preſs of the Method. And therefore as I did allow well of particular topics for invention, ſo I do allow likewiſe of particular Methods of tradition.

[10] This paſſage is equivalent to "although indeed a man would not leave ſome fortified place hoſtile to him in his rear."

Another diverſity of judgment[11] in the delivery and teaching of knowledge is according unto the light and preſuppoſitions of that which is delivered; for that knowledge which is new, and foreign from opinions received, is to be delivered in another form than that that is agreeable[12] and familiar; and therefore Ariſtotle, when he thinks to tax Democritus, doth in truth commend him, where he ſaith, *If we ſhall indeed diſpute, and not follow after ſimilitudes, &c.*[13] For thoſe whoſe conceits are ſeated in popular opinions, need only but to prove or diſpute; but thoſe whoſe conceits are beyond popular opinions, have a double labour; the one to make themſelves conceived, and the other to prove and demonſtrate: ſo that it is of neceſſity with them to have recourſe to ſimilitudes and tranſlations to expreſs themſelves. And therefore in the infancy of learning, and in rude times, when thoſe conceits which are now trivial were then new, the world was full of parables and ſimilitudes; for elſe would men either have paſſed over without mark, or elſe rejected for paradoxes, that which was offered, before they had underſtood or judged. So in divine learning, we ſee how frequent parables and tropes are: for it is a rule, that whatſoever ſcience is not conſonant to preſuppoſitions, muſt pray in aid of ſimilitudes.

According to the knowledge of the receiver.

[11] Bacon meant here to ſay "diverſity of Method to be uſed with judgment," &c.; for the Latin is "Sequitur aliud Methodi diſcrimen in tradendis ſcientiis cum judicio adhibendum."

[12] *Agreeable.* "Opinionibus jampridem imbibitis et receptis affinis."

[13] Ariſt. *Eth. Nic.* vi. 3, ſee note in Ellis and Spedding's ed.

Other differences.

There be alſo other diverſities of Methods vulgar and received: as that of Reſolution or Analyſis, of Conſtitution or Syſtaſis, of Concealment or Cryptic, &c., which I do allow well of, though I have ſtood upon thoſe which are leaſt handled and obſerved. All which I have remembered to this purpoſe, becauſe I would erect and conſtitute one general inquiry, which ſeems to me deficient, touching the Wiſdom of Tradition.

De prudentia Traditionis.

Method alſo conſiders the limitation of propoſitions.

But unto this part of knowledge concerning Methods doth farther belong not only the architecture of the whole frame of a work, but alſo the ſeveral beams and columns thereof; not as to their ſtuff, but as to their quantity and figure. And therefore Method conſidereth not only the diſpoſition of the argument or ſubject, but likewiſe the propoſitions: not as to their truth or matter, but as to their limitation and manner. For herein Ramus merited better a great deal in reviving the good rules of propoſitions, Καθόλου πρῶτον κατὰ παντός, &c., than he did in introducing the canker of epitomes;[14] and yet (as it is the condition of human things that, according to the ancient fables, *the moſt precious things have the moſt pernicious keepers;*) it was ſo, that the attempt of the one made him fall upon the other. For he had need be well conducted that ſhould deſign to make axioms convertible, if he make them not withal circular, and non-promovent, or incurring into themſelves; but yet the intention was excellent.

[14] Should this not rather have been *Dichotomies?* "quam in unica ſua Methodo et *Dichotomiis* obtrudendis."

The other conſiderations of method, concerning propoſitions, are chiefly touching the utmoſt propoſitions, which limit the dimenſions of ſciences; for every knowledge may be fitly ſaid, beſides the profundity, (which is the truth and ſubſtance of it, that makes it ſolid,) to have a longitude and a latitude; accounting the latitude towards other ſciences, and the longitude towards action; that is, from the greateſt generality to the moſt particular precept. The one giveth rule how far one knowledge ought to intermeddle within the province of another, which is the rule they call Καθαυτὸ;[15] the other giveth rule unto what degree of particularity a knowledge ſhould deſcend: which latter I find paſſed over in ſilence, being in my judgment the more material; for certainly there muſt be ſomewhat left to practice; but how much is worthy the inquiry. We ſee remote and ſuperficial generalities do but offer knowledge to ſcorn of practical men; and are no more aiding to practice, than an Ortelius'[16] univerſal map is to direct the way between London and York. The better ſort of rules have been not unfitly compared to glaſſes of ſteel unpoliſhed, where you may ſee the images of things, but firſt they muſt be filed: ſo the rules will help, if they be laboured and poliſhed by practice. But how cryſtalline they may be made at the firſt, and how far forth they may be poliſhed aforehand, is the queſtion; the inquiry whereof ſeemeth to me deficient.

Method alſo chiefly concerns univerſal propoſitions.

De productione Axiomatum.

There hath been alſo laboured and put in prac- Falſe Method, as

[15] Viz. that Propoſitions ſhould be true eſſentially.

[16] Ortelius was an Antwerper, died 1598, ſtyled the "Ptolemæus ſui ſæculi."

that of Raymond Lully.

tice a method, which is not a lawful method, but a method of impoſture; which is, to deliver knowledges in ſuch manner, as men may ſpeedily come to make a ſhow of learning who have it not: ſuch was the travail of Raymundus Lullius, in making that art which bears his name:[17] not unlike to ſome books of typocoſmy, which have been made ſince; being nothing but a maſs of words of all arts, to give men countenance, that thoſe which uſe the terms might be thought to underſtand the art; which collections are much like a fripper's or broker's ſhop, that hath ends of everything, but nothing of worth.

De Aug. vi. 2. (*c.*) Illuſtration of tradition, or rhetoric.

Now we deſcend to that part which concerneth the illuſtration of tradition, comprehended in that ſcience which we call *rhetoric, or art of eloquence;* a ſcience excellent, and excellently well laboured. For though in true value it is inferior to wiſdom, (as it is ſaid by God to Moſes, when he diſabled himſelf for want of this faculty, *Aaron ſhall be thy ſpeaker, and thou ſhalt be to him as God:*)[18] yet with people it is the more mighty: ſo Salomon ſaith, *Sapiens corde appellabitur prudens, ſed dulcis eloquio majora reperiet;*[19] ſignifying, that profoundneſs of wiſdom will help a man to a name or admiration, but that it is eloquence that prevaileth in an active life. And as to the labouring of it,

[17] Raymundus Lully, "the Enlightened Doctor," was born in Majorca in 1225, ſtudied Arabian philoſophy, chemiſtry, phyſic, and divinity. He was ſtoned to death, at the age of 80, in Mauretania, for preaching the goſpel. For a brief account of his Method, ſee note to Ellis and Spedding's De Augm. vi. 2. (p. 669.)

[18] Exod. iv. 16. [19] Prov. xvi. 21.

the emulation of Ariſtotle with the rhetoricians of his time, and the experience of Cicero, hath made them in their works of rhetorics exceed themſelves. Again, the excellency of examples of eloquence in the orations of Demoſthenes and Cicero, added to the perfection of the precepts of eloquence, hath doubled the progreſſion in this art; and therefore the deficiencies which I ſhall note will rather be in ſome collections, which may as hand-maids attend the art, than in the rules or uſe of the art itſelf.

Definition of rhetoric.

Notwithſtanding, to ſtir the earth a little about the roots of this ſcience, as we have done of the reſt; the duty and office of rhetoric is, to apply reaſon to imagination for the better moving of the will. For we ſee reaſon is diſturbed in the adminiſtration thereof by three means; by *illaqueation* or *ſophiſm*, which pertains to logic; by *imagination* or *impreſſion*, which pertains to rhetoric; and by *paſſion* or *affection*, which pertains to morality. And as in negotiation with others, men are wrought by cunning, by importunity, and by vehemency; ſo in this negotiation within ourſelves, men are undermined by inconſequences, ſolicited and importuned by impreſſions or obſervations, and tranſported by paſſions. Neither is the nature of man ſo unfortunately built, as that thoſe powers and arts ſhould have force to diſturb reaſon, and not to eſtabliſh and advance it. For the end of logic is, to teach a form of argument to ſecure reaſon, and not to entrap it; the end of morality is to procure the affections to obey reaſon,

and not to invade it; the end of rhetoric is, to fill the imagination to second reason, and not to oppress it: for these abuses of art come in but *ex obliquo*, for caution.

Plato underrated it.

And therefore it was great injustice in Plato, though springing out of a just hatred to the rhetoricians of his time, to esteem of rhetoric but as a voluptuary art, resembling it to cookery, that did mar wholesome meats, and help unwholesome by variety of sauces to the pleasure of the taste.[20] For we see that speech is much more conversant in adorning that which is good, than in colouring that which is evil; for there is no man but speaketh more honestly than he can do or think: and it was excellently noted by Thucydides in Cleon, that because he used to hold on the bad side in causes of estate, therefore he was ever inveighing against eloquence and good speech;[21] knowing that no man can speak fair of courses sordid and base. And therefore as Plato said elegantly, *That virtue, if she could be seen, would move great love and affection*;[22] so seeing that she cannot be showed to the sense by corporal shape, the next degree is to show her to the imagination in lively representation: for to show her to reason only in subtilty of argument, was a thing ever derided in Chrysippus and many of the Stoics; who thought to thrust virtue upon men by sharp disputations and conclusions, which have no sympathy with the will of man.

[20] Plat. *Gorg.* 462, *seq.* [21] Thucyd. iii. 42.
[22] Plat. *Phædr.* 250.

Again, if the affections in themſelves were pliant and obedient to reaſon, it were true there ſhould be no great uſe of perſuaſions and inſinuations to the will, more than of naked propoſition and proofs; but in regard of the continual mutinies and ſeditions of the affections, Uſeful to quell the ſeditions of the paſſions.

> Video meliora, proboque;
> Deteriora ſequor:[23]

reaſon would become captive and ſervile, if eloquence of perſuaſions did not practiſe and win the imagination from the affections' part, and contract a confederacy between the reaſon and imagination againſt the affections; for the affections themſelves carry ever an appetite to good, as reaſon doth. The difference is, that the affection beholdeth merely the preſent; reaſon beholdeth the future and ſum of time. And therefore the preſent filling the imagination more, reaſon is commonly vanquiſhed; but after that force of eloquence and perſuaſion hath made things future and remote appear as preſent, then upon the revolt of the imagination reaſon prevaileth.

We conclude, therefore, that rhetoric can be no more charged with the colouring of the worſe part, than logic with ſophiſtry,[24] or morality with vice. For we know the doctrines of contraries are the ſame, though the uſe be oppoſite. It appeareth alſo that logic differeth from rhetoric, not only as the fiſt from the palm, the one cloſe, the other at large; but much more in this, that logic handleth reaſon exact and in truth, and rhetoric handleth Rhetoric by the ſide of logic.

[23] Ovid. *Metam.* vii. 20.

[24] Ariſt. *Rhet.* i. i. 14.

it as it is planted in popular opinions and manners. And therefore Ariſtotle[25] doth wiſely place rhetoric as between logic on the one ſide, and moral or civil knowledge on the other, as participating of both: for the proofs and demonſtrations of logic are towards all men indifferent and the ſame; but the proofs and perſuaſions of rhetoric ought to differ according to the auditors:

Orpheus in ſylvis, inter delphinas Arion.[26]

Which application, in perfection of idea, ought to extend ſo far, that if a man ſhould ſpeak of the ſame thing to ſeveral perſons, he ſhould ſpeak to them all reſpectively and ſeveral ways: though this politic part of eloquence in private ſpeech it is eaſy for the greateſt orators to want: whilſt by the obſerving their well-graced forms of ſpeech they leeſe the volubility of application: and therefore it ſhall not be amiſs to recommend this to better inquiry, not being curious whether we place it here, or in that part which concerneth policy.

De prudentia ſermonis privati.

Now therefore will I deſcend to the deficiences, which, as I ſaid, are but attendances:[27] and firſt, I do not find the wiſdom and diligence of Ariſtotle well purſued, who began to make a collection of the popular ſigns and colours of good and evil, both ſimple and comparative, which are as the ſophiſms of rhetoric, as I touched before.[28] For example:

Its deficiences: no good collection of colours of good and evil.

[25] Ariſtot. *Rhet.* i. 2. 7. [26] Virg. *Ecl.* viii. 56.

[27] *Attendances.* "Pertinent omnia ad promptuarium."

[28] Theſe were publiſhed in 1597, at the end of the volume of Eſſays. They are reproduced in the correſponding place of the Latin. See Ariſt. *Top.* i. 12.

Sophiſma.

Quod laudatur, bonum: quod vituperatur, malum.

Redargutio.

Laudat venales qui vult extrudere merces.[29]

Malum eſt, malum eſt, inquit emptor: ſed cum receſſerit, tum gloriabitur![30]

The defects in the labour of Ariſtotle are three: one, that there be but a few of many; another, that their elenches are not annexed; and the third, that he conceived but a part of the uſe of them: for their uſe is not only in probation, but much more in impreſſion. For many forms are equal in ſignification which are differing in impreſſion; as the difference is great in the piercing of that which is ſharp and that which is flat, though the ſtrength of the percuſſion be the ſame: for there is no man but will be a little more raiſed by hearing it ſaid, *Your enemies will be glad of this:*

Hoc Ithacus velit, et magno mercentur Atridæ:[31]

than by hearing it ſaid only, *This is evil for you.*

Deficient in antitheta and formulæ.

Secondly, I do reſume alſo that which I mentioned before, touching proviſion or preparatory ſtore for the furniture of ſpeech and readineſs of invention; which appeareth to be of two ſorts; the one in reſemblance to a ſhop of pieces unmade up, the other to a ſhop of things ready made up; both to be applied to that which is frequent and moſt in requeſt: the former of theſe I will call *antitheta*, and the latter *formulæ*.

Antitheta are *theſes* argued *pro et contra;* wherein

[29] Hor. *Ep.* ii. 2. 11.
[30] Prov. xx. 14.
[31] Virg. *Æn.* ii. 104.

men may be more large and laborious: but, in ſuch as are able to do it, to avoid prolixity of entry, I wiſh the ſeeds of the ſeveral arguments to be caſt up into ſome brief and acute ſentences, not to be cited, but to be as ſkeins or bottoms of thread, to be unwinded at large when they come to be uſed; ſupplying authorities and examples by reference.

Pro verbis legis.

Non eſt interpretatio, ſed divinatio, quæ recedit a litera: Cum receditur a litera, judex tranſit in legiſlatorem.

Pro ſententia legis.

Ex omnibus verbis eſt eliciendus ſenſus qui interpretatur ſingula.

Formulæ are but decent and apt paſſages or conveyances of ſpeech, which may ſerve indifferently for differing ſubjects; as of *preface*, *concluſion*, *digreſſion*, *tranſition*, *excuſation*, &c. For as in buildings, there is great pleaſure and uſe in the well caſting of the ſtaircaſes, entries, doors, windows, and the like; ſo in ſpeech, the conveyances and paſſages are of ſpecial ornament and effect.

A concluſion in a deliberative.

So may we redeem the faults paſſed, and prevent the inconveniences future.

Appendices to the art of tradition. (*a.*) Advice to critics.

There remain two appendices touching the tradition of knowledge, the one critical, the other pedantical. For all knowledge is either delivered by teachers, or attained by men's proper endeavours: and therefore as the principal part of tradition of knowledge concerneth chiefly writing of books, ſo the relative part thereof concerneth reading of books; whereunto appertain incidently theſe conſiderations. The firſt is concerning the true

correction and edition of authors; wherein nevertheleſs raſh diligence hath done great prejudice. For theſe critics have often preſumed, that that which they underſtand not is falſe ſet down: as the prieſt that, where he found it written of St. Paul, *Demiſſus eſt per ſportam*[32] mended his book, and made it *Demiſſus eſt per portam*; becauſe *ſporta* was a hard word, and out of his reading: and ſurely their errors, though they be not ſo palpable and ridiculous, are yet of the ſame kind. And therefore, as it hath been wiſely noted, the moſt corrected copies are commonly the leaſt correct.

The ſecond is concerning the expoſition and explication of authors, which reſteth in annotations and commentaries: wherein it is over uſual to blanch the obſcure places, and diſcourſe upon the plain.

The third is concerning the times, which in many caſes give great light to true interpretations.

The fourth is concerning ſome brief cenſure and judgment of the authors; that men thereby may make ſome election unto themſelves what books to read.

And the fifth is concerning the ſyntax and diſpoſition of ſtudies; that men may know in what order or purſuit to read.

(β.) Of pedantical knowledge, (*i.e.* wiſdom in teaching.)

For pedantical knowledge, it containeth that difference of tradition which is proper for youth; whereunto appertain divers conſiderations of great fruit.

[32] Acts ix. 25.

As firſt, the timing and ſeaſoning of knowledges; as with what to initiate them, and from what for a time to refrain them.

Secondly, the conſideration where to begin with the eaſieſt, and ſo proceed to the more difficult; and in what courſes to preſs the more difficult, and then to turn them to the more eaſy: for it is one method to practiſe ſwimming with bladders, and another to practiſe dancing with heavy ſhoes.

A third is the application of learning according unto the propriety of the wits; for there is no defect in the faculties intellectual, but ſeemeth to have a proper cure contained in ſome ſtudies: as, for example, if a child be bird-witted, that is, hath not the faculty of attention, the mathematics giveth a remedy thereunto; for in them, if the wit be caught away but a moment, one is to begin anew. And as ſciences have a propriety towards faculties for cure and help, ſo faculties or powers have a ſympathy towards ſciences for excellency or ſpeedy profiting: and therefore it is an inquiry of great wiſdom, what kinds of wits and natures are moſt apt and proper for what ſciences.

Fourthly, the ordering of exerciſes is matter of great conſequence to hurt or help: for, as is well obſerved by Cicero,[33] men in exerciſing their faculties, if they be not well adviſed, do exerciſe their faults and get ill habits as well as good; ſo there is a great judgment to be had in the continuance and intermiſſion of exerciſes. It were too long to particularize a number of other conſidera-

[33] Cic. *De Or.* i. 33.

tions of this nature, things but of mean appearance, but of ſingular efficacy. For as the wronging or cheriſhing of ſeeds or young plants is that that is moſt important to their thriving: (and as it was noted that the firſt ſix kings being in truth as tutors of the ſtate of Rome in the infancy thereof, was the principal cauſe of the immenſe greatneſs of that ſtate which followed:) ſo the culture and manurance of minds in youth, hath ſuch a forcible, though unſeen operation, as hardly any length of time or contention of labour can countervail it afterwards. And it is not amiſs to obſerve alſo how ſmall and mean faculties gotten by education, yet when they fall into great men or great matters, do work great and important effects; whereof we ſee a notable example in Tacitus[34] of two ſtage players, Percennius and Vibulenus, who by their faculty of playing put the Pannonian armies into an extreme tumult and combuſtion. For there ariſing a mutiny amongſt them upon the death of Auguſtus Cæſar, Blæſus the lieutenant had committed ſome of the mutineers, which were ſuddenly reſcued; whereupon Vibulenus got to be heard ſpeak, which he did in this manner:—*Theſe poor innocent wretches appointed to cruel death, you have reſtored to behold the light; but who ſhall reſtore my brother to me, or life unto my brother, that was ſent hither in meſſage from the legions of Germany, to treat of the common cauſe? and he hath murdered him this laſt night by ſome of his fencers and ruffians, that he hath about him for his execu-*

[34] Tacit. *Ann.* i. 22, 23.

tioners upon ſoldiers. Anſwer, Blæſus, what is done with his body? The mortaleſt enemies do not deny burial. When I have performed my laſt duty to the corpſe with kiſſes, with tears, command me to be ſlain beſide him; ſo that theſe my fellows, for our good meaning, and our true hearts to the legions, may have leave to bury us. With which ſpeech he put the army into an infinite fury and uproar: whereas truth was he had no brother, neither was there any ſuch matter; but he played it merely as if he had been upon the ſtage.

But to return: we are now come to a period of rational knowledges; wherein if I have made the diviſions other than thoſe that are received, yet would I not be thought to diſallow all thoſe diviſions which I do not uſe. For there is a double neceſſity impoſed upon me of altering the diviſions. The one, becauſe it differeth in end and purpoſe, to ſort together thoſe things which are next in nature, and thoſe things which are next in uſe. For if a ſecretary of ſtate ſhould ſort his papers, it is like in his ſtudy or general cabinet he would ſort together things of a nature, as treaties, inſtructions, &c., but in his boxes or particular cabinet he would ſort together thoſe that he were like to uſe together, though of ſeveral natures; ſo in this general cabinet of knowledge it was neceſſary for me to follow the diviſions of the nature of things; whereas if myſelf had been to handle any particular knowledge, I would have reſpected the diviſions fitteſt for uſe. The other, becauſe the bringing in of the deficiences did by conſequence

alter the partitions of the reſt. For let the knowledge extant, for demonſtration ſake, be fifteen; let the knowledge with the deficiences be twenty; the parts of fifteen are not the parts of twenty; for the parts of fifteen are three and five; the parts of twenty are two, four, five, and ten. So as theſe things are without contradiction, and could not otherwiſe be.

De Aug. VII. 1. (B.) The Moral functions of the Mind; *i.e.* of the Appetite and Will of men. Ill handled as yet.

WE proceed now to that knowledge which conſidereth of the appetite and will of man: whereof Salomon ſaith, *Ante omnia, fili, cuſtodi cor tuum; nam inde procedunt actiones vitæ.*[35] In the handling of this ſcience, thoſe which have written ſeem to me to have done as if a man, that profeſſed to teach to write, did only exhibit fair copies of alphabets and letters joined, without giving any precepts or directions for the carriage of the hand and framing of the letters. So have they made good and fair exemplars and copies, carrying the draughts and portraitures of *good*, *virtue*, *duty*, *felicity*; propounding them well deſcribed as the true objects and ſcopes of man's will and deſires. But how to attain theſe excellent marks, and how to frame and ſubdue the will of man to become true and conformable to theſe purſuits, they paſs it over altogether, or ſlightly and unprofitably. For it is not the diſputing that moral virtues are in the mind of man by habit and not by nature,[36] or the

[35] Prov. iv. 23.
[36] Ariſt. *Eth. Nic.* ii. 1. *Eud. Eth.* i. 3. 1.