caught and confined in an inextricable net, and bound down as with a chain of adamant.

As for the tale that the discovery of Ceres was reserved for this god, and that while he was hunting, and denied to the rest of the gods, though diligently and specially engaged in seeking her, it contains a very true and wise admonition, which is, not to look for the invention of things useful for life and civilisation from abstract philosophies, which are as it were the greater gods, even though they devote all their strength to the purpose; but only from Pan, that is from sagacious experience and the universal knowledge of nature; which oftentimes, by a kind of chance, and while engaged as it were in hunting, stumbles upon such discoveries. For the most useful inventions are due to experience, and have come to men like windfalls.

Again that contest in music and the issue of it exhibits a wholesome doctrine, and one which may well restrain and reduce to sobriety the pride and overweening confidence of human reason and judgment. For it seems that there are two kinds of harmony and music; one of divine wisdom, the other of human reason. And to the human judgment, and the ears as it were of mortals, the government of the world and the more secret judgments of God sound somewhat harsh and untunable; and though this be ignorance, such as deserves to be distinguished with the ears of an ass, yet those ears are worn secretly and not in the face of the world; for it is not a thing observed or noticed as a deformity by the vulgar.

Lastly it is no marvel if no loves are attributed to Pan, besides his marriage with Echo. For the world enjoys itself, and in itself all things that are. Now he who is in love wants something; and where there is plenty of everything there is no room for want. The world therefore can have no loves, nor any want (being content with itself), unless it be of *discourse*. Such is the nymph Echo, a thing not substantial but only a voice; or if it be of the more exact and delicate kind, *Syringa*,—when the words and voices are regulated and modulated by numbers, whether poetical or oratorical. But it is well devised that of all words and voices Echo alone should be chosen for the world's wife; for that is the true philosophy which echoes most faithfully the voices of the world itself, and is written as it were at the world's own dictation; being nothing else than the image and reflexion thereof, to which it adds nothing of its own, but only iterates and gives it back.

The story that Pan once drew the Moon apart into deep woods, seems to have reference to the intercourse of sense with heavenly or divine things. For the case of Endymion is different from that of Pan. To Endymion the Moon descended of her own accord as he slept; for divine influences sometimes steal spontaneously into the understanding when at rest, and withdrawn from the senses; but if they are invoked and solicited by the sense, as by Pan, then they afford no other light but that,

> Quale per incertam Lunam sub luce maligna
> Est iter in silvis.[14]

That the world has no issue is another allusion to the sufficiency and perfection of it in itself. Generation goes on among the parts of the world; but how can the whole generate, when no body exists out of itself? As for that little woman, Iambe, Pan's putative daughter, it is an addition to the fable with a great deal of wisdom in it; for by her are represented those vain babbling doctrines about the nature of things, which wander abroad in all times and fill the world; doctrines barren in fact, counterfeit in breed, but by reason of their garrulity sometimes entertaining, and sometimes again troublesome and annoying.

[14] Virg. *Æn.* vi. 270:—As by the wayward moon's inconstant light
A path through woods . . .

Another example of Philosophy according to the Ancient Parables, in Politics. *Of War according to the story of* Perseus.

PERSEUS, an Eastern man, was sent, it is said, by Pallas to destroy Medusa, who was a grievous plague to many nations of the West in the furthest parts of Spain. She was a monster, otherwise huge and savage, and of an aspect so foul and hideous that her look alone turned men into stones. Now Medusa was one of the Gorgons, and the only mortal amongst them, the others not being subject to death. Perseus then, equipping himself for so noble an enterprise, borrowed arms as presents from three of the gods; from Mercury wings,—fitted to the ankles, not the shoulders; from Pluto a helmet; from Pallas a shield and mirror. Nevertheless (though he was now so well furnished) he did not go direct to Medusa, but turned aside to the Grææ. These were the half-sisters of the Gorgons; and were grey-headed from their birth, and like old women. They had but one eye and one tooth among them all; which, as they had occasion to go abroad, each wore by turns and put off again when she came back. This eye and this tooth they lent to Perseus. And now judging himself sufficiently armed to effect his purpose, he went against Medusa with all haste, flying. Her he found sleeping; but not daring to meet her gaze (in case she should wake), he turned his face away, and looking into the mirror of Pallas to direct his blow, cut off her head. From her blood spilt upon the ground immediately sprang forth Pegasus the winged horse. But the severed head Perseus transferred to the shield of Pallas, and fixed it there; where it still retained its former virtue, that whoever gazed upon it became as it were thunder or planet struck.

This fable seems to have been devised with reference to method and prudence in making war. And first, the undertaking of every war ought to be as a mission from Pallas; not from Venus (as the Trojan war was), or for any other slight motive; for resolutions respecting wars ought to be based on solid counsels. Secondly, with regard to the kind of war to be chosen, the fable propounds three very wholesome and important precepts. The first is, not to make too great a point of subjugating the neighbouring nations. For the method of enlarging a patrimony and an empire is not the same. In private estates contiguity of lands is taken into account, but in the extension of empire, occasion and facility for making war and fruit of conquest ought to be regarded in place of contiguity. And therefore Perseus, though in the East, did not shrink from an expedition even to the far West. Of this there is a notable instance in the different modes of war practised by Philip and Alexander, father and son. The former, engaging in wars with neighbouring countries, after much exertion and danger (for both at other times and especially at Chæronea he was reduced to extreme peril), added a few cities to his empire; whereas Alexander, with wise boldness undertaking a distant expedition into Persia, subjugated an infinite number of nations, and suffered more by his marches than his battles. But perhaps this difference is shown still more clearly in the increase of the empire of the Romans, who while they had scarce penetrated westward beyond Liguria, had already conquered and included within their empire eastern provinces as far off as Mount Taurus. So Charles the Eighth, King of France, having found the war with Bretagne (afterwards arranged by marriage [15]) no easy matter, undertook that distant enterprise against Naples, which he effected with wonderful ease and success. Certainly wars made upon distant nations have this advantage, that the invaders have to fight with those who have no experience of their mode of warfare and arms; whereas in a war with neighbours it is otherwise. Moreover the equipment of such expeditions is generally more perfect and better appointed, and the very boldness and confidence of the aggressor inspires greater terror into the enemy. Nor does it often happen in these distant expeditions that the enemy to whom the war is brought from such a distance can make diversions or counter-invasions, as is the case in wars between neighbours. But the chief point is

[15] In 1491 Charles the Eighth married Anne of Brittany, and thus put an end to the war which Bacon here speaks of.

that in subduing neighbouring states there is only a small choice of opportunities; whereas in distant enterprises the aggressor may carry the war at pleasure, either where military discipline is most relaxed, or the strength of a people is most weakened and impaired, or the rise of civil dissension and other like opportunities present themselves. The second precept is, that there must ever be a cause of war, just, pious, honourable, and popular. For this begets alacrity as well in the soldiers, as in those who provide the funds, opens the way to alliances, and conciliates friends, and has many other advantages. Now among the causes of war few are more popular than the putting down of tyrannies, beneath whose yoke the spirit and energy of the people are worn down and prostrated, as by the head of Medusa; a thing which gained Hercules divine honours. Certainly the Romans made it a great point of duty to hasten with all speed to succour their allies when in any way attacked. Wars also undertaken for a just revenge have almost always been successful; as the war against Brutus and Cassius to avenge the murder of Cæsar; of Severus to avenge the death of Pertinax; of Junius Brutus to avenge the death of Lucretia. In a word, whosoever either relieves or avenges by war the calamities and injuries of men, bears arms under Perseus. The third precept is, that in every war a true estimate of strength must be taken, and it must be duly considered whether the war be such as can be carried through and brought to an issue; so that one may not engage in pursuit of vast and boundless projects. For of the Gorgons (which are the representatives of war) Perseus wisely chose her alone who was of mortal nature, nor did he attempt impossibilities. Such then is the advice which the fable gives touching the things that require deliberation in undertaking war; the rest relates to the carrying it on.

In war those three gifts of the gods are of all things the most important; insomuch that they commonly command and carry with them fortune itself. For Perseus received speed from Mercury, secrecy of counsels from Orcus, and foresight from Pallas. And it is not without allegory, and that of the wisest sort, that those wings of speed (seeing speed is of much avail in war) were attached to the feet and not to the shoulders; because celerity is required not so much in the first onsets of war as in the pursuit and following up thereof. For no error in war is more common than this, that the prosecutions and subsidiary actions correspond not to the energy of the first commencements. And the helmet of Pluto (which used to render men invisible) is a manifest parable. For next to speed in war secrecy of counsels is of the greatest moment; of which indeed speed itself is a great part; for speed anticipates the disclosures of counsels. To the helmet of Pluto belongs also this: that there should be one commander in a war, with free instructions; for consultations held with many savour more of the crests of Mars than the helmet of Pluto. Variety of pretexts, ambiguous directions, rumours spread abroad, which either blind or avert men's eyes and involve the real design in obscurity, refer to the same. So also diligent and suspicious precautions respecting despatches, ambassadors, deserters, and many like matters, are wreathed round the helmet of Pluto. But it is of no less importance to discover the counsels of the enemy than to conceal our own. To the helmet of Pluto therefore must be added the mirror of Pallas, whereby to discern the strength or weakness of the enemy, their secret partisans, their discords and factions, their movements and designs. But since there is so much of chance in war, that no great confidence can be placed either in discovering the designs of the enemy, or in concealing our own, or even in speed itself, we must take special care to be armed with the shield of Pallas, that is, of foresight, so as to leave as little as possible to fortune. To this belong the exploring of roads before a march, the careful fortification of the camp (which in modern warfare has fallen almost into disuse, whereas the camps of the Romans were like a fortified town, to fall back upon in case of defeat), a firm and well drawn up line of battle, not trusting too much to light troops, or even to cavalry; in a word, everything which relates to a sound and careful system of defensive war; for the shield of Pallas is generally of more avail in war than the sword of Mars itself. But Perseus, however furnished with forces and courage, has still need of one thing more, of the greatest possible importance, before he commences the

campaign ; he must turn aside to the Grææ. Now the Græ:e are Treasons, which are the Sisters of War, though not indeed own sisters, but as it were of less noble birth. For wars are noble and generous ; treasons degenerate and base. They are portrayed appropriately as being grey-headed from their birth and like old women, by reason of the perpetual cares and anxieties attending traitors. Their power (before they openly desert) is in the eye or tooth ; for all faction, when discontented and inclined to treason, is both watchful and biting. Moreover this eye and tooth are, as it were, common to them all ; for whatever they learn and discover is handed from one to another, and circulates through the whole party. And with regard to the tooth, they all bite as it were with one mouth, and utter the same scandals ; so that if you hear one, you hear all. Wherefore Perseus must conciliate these Grææ, and bring them into alliance with him, especially that they may lend him their eye and tooth ; the eye to gain information ; the tooth to spread rumours, raise envy, and gain over the minds of men. But when everything has been arranged in order for war, we must take special care, like Perseus, to find Medusa asleep ; for he who undertakes a war wisely will almost always attack his enemy unprepared and in security. Lastly, in the very actions and onsets of war the mirror of Pallas must be resorted to ; for there are many who before the time of danger can take a clear and accurate survey of the position of the enemy, but in the very moment of peril they are either stupefied with terror, or look their dangers too rashly in the face ; and so rush madly into them, bent on overcoming, not on avoiding them. Neither of which things should be done ; but we should turn aside the head and look into the mirror of Pallas, that the onset may be rightly directed without either terror or fury.

From the conclusion of the war and victory follow two effects, first, the birth and springing up of Pegasus, which evidently enough signifies Fame that flies abroad and proclaims the victory, and so makes what remains of the war easy and satisfactory ; secondly, the carrying of Medusa's head on the shield ; to which for excellence no other kind of defence can be compared. For one great and memorable enterprise successfully carried out paralyses every movement of the enemy, and stupefies disaffection itself.

The third Example of Philosophy according to the Ancient Fables, in Moral Philosophy. *Of Desire, according to the fable of* Dionysus.

They say that Semele, the mistress of Jupiter, having bound him by an inviolable oath to grant her a request whatever it might be, desired of him to come to her arms in the same form as he would to Juno ; and so she was scorched to death in his embrace. The child which she bore in her womb was taken by his father and sewn up in his thigh, till the time of gestation was accomplished. And because the child, when in the thigh of Jupiter, pinched and galled him so as to make him limp, he received the name of Dionysus. After he was brought forth he was nursed for some years by Proserpine ; and when he grew up his face was so like a woman's that it seemed doubtful of which sex he was. He was likewise once dead and buried for a time, but came to life again not long after. In his early youth he was the first to invent and explain the culture of the vine, and the making of wine, and its use ; whereby becoming renowned and illustrious, he subdued the whole world and advanced to the furthest parts of India. He rode in a chariot drawn by tigers, round which danced certain deformed demons called Cobali ; Acratus and others. The Muses also attended in his train. He took to wife Ariadne, whom Theseus had deserted and abandoned. His sacred tree was the ivy. He was regarded likewise as the inventor and institutor of sacred rites and orgies ; but such as were fanatical and full of corruption and moreover cruel. He had also the power of exciting phrensy. At least it was by women excited to phrensy in his orgies that two renowned men, Pentheus and Orpheus, are said to have been torn to pieces ; the one having climbed into a tree out of curiosity to see what they were doing ; the other while playing sweetly and skilfully on the lyre. Moreover the actions of this god are often confounded with those of Jupiter.

The fable appears to relate to morals; and indeed there is scarcely anything better to be found in moral philosophy. Under the person of Bacchus is depicted the nature of Desire, or the passions and perturbations of the mind. First, therefore, with regard to the origin of Desire. The mother of all desire (though ever so hurtful) is nothing else than apparent good. For as the mother of virtue is real good, so the mother of desire is apparent good. One the lawful wife of Jupiter (in whose person the human soul is represented), the other his mistress; who nevertheless aspires, like Semele, to the honours of Juno. Now the conception of Desire is always in some unlawful wish, rashly granted before it has been understood and weighed; and as the passion warms, its mother (which is the nature and species of good), not able to endure the heat of it, is destroyed and perishes in the flame. Then the progress of Desire from its first conception is of this kind. It is both nursed and concealed in the human mind (which is its father); especially in the lower part of it, as in the thigh; where it causes such prickings, pains and depressions, that the actions and resolutions of the mind labour and limp with it. And even when it has grown strong with indulgence and custom, and breaks forth into acts (as if it had now accomplished its time and were fairly born and delivered), yet at first it is brought up for a time by Proserpine; that is, it seeks hiding-places and keeps itself secret, and as it were underground; until throwing off all restraints of shame and fear, and growing bolder and bolder, it either assumes the mask of some virtue, or sets infamy itself at defiance. And it is most true that every passion of the more violent kind is as it were of doubtful sex; for it has at once the force of a man and the weakness of a woman. It is well said likewise that Bacchus died and came to life again; for the passions seem sometimes lulled to sleep, and as it were dead; yet can they never be trusted, no not though they be buried. For give them matter and opportunity and they will rise again [15].

It is a wise allegory too, that of the invention of the vine. For every passion is very ingenious and sagacious in discovering the things which nourish and foster itself. Now of all things known to man wine is the most powerful and efficacious in stimulating and inflaming every kind of excitement; serving as a common fuel to desires in general. Very elegantly too is passion or desire described as the subduer of provinces and the undertaker of an endless course of conquests. For it is never content with what it has got, but with infinite and insatiable appetite tries for something more, and ever craves for new triumphs. Tigers likewise are kept in the stables of the passions, and at times yoked to their chariot; for when passion ceases to go on foot and comes to ride in its chariot, as in celebration of its victory and triumph over reason, then is it cruel, savage, and pitiless towards all that withstand or oppose it. Again there is humour in making those ridiculous demons dance about the chariot of Bacchus. For every passion of the more vehement kind produces motions in the eyes, and indeed in the whole countenance and gesture, which are uncomely, unsettled, skipping, and deformed; insomuch that when a man under the influence of any passion (as anger, scorn, love, or the like) seems most grand and imposing in his own eyes, to the lookers on he appears unseemly and ridiculous. It is true also that the Muses are seen in the train of passion; there being scarce any passion which has not some branch of learning to flatter it. For herein the majesty of the Muses suffers immensely from the license and wantonness of men's wits, turning those that should be the guides and standard-bearers of man's life into mere followers in the train and ministers to the pleasures of the passions.

Especially noble again is that part of the allegory which represents Bacchus as lavishing his love upon one whom another man had cast off. For most certain it is that passion ever seeks and aspires after that which experience has long since repudiated. And let all men who in pursuit and indulgence of their passions

[15] Yet Rochefoucauld has said "Il est impossible d'aimer une seconde fois ce qu'on a véritablement cessé d'aimer."—*Reflexions Morales*, 294. [The two observations are not, I think, incompatible with one another. Bacon speaks of the appetite rather than the sentiment; and Rochefoucauld does not say that a man cannot love again that which he *thinks* he has ceased to love.—*J. S.*]

care not what price they pay for the enjoyment of them, know this: that whatever be the object of their pursuit—be it honour or fortune or love or glory or knowledge, or what it may—they are paying court to things cast off,—things which many men in all times have tried and upon trial rejected with disgust.

Nor is the consecration of Ivy to Bacchus without its mystery. For this has a double propriety. First, because ivy flourishes in the winter; next because it has the property of creeping and spreading about so many things, as trees, walls, buildings, etc. For as to the first, every passion flourishes and acquires vigour by being resisted and forbidden, as by reaction or *antiperistasis*; like the ivy by the cold of winter. As to the second, any predominant passion in the human spirit spreads itself like ivy round all its actions and resolves, so that you cannot find anything free from the embrace of its tendrils. Neither is it to be wondered at if superstitious rites are attributed to Bacchus; for almost every insane passion grows rank in depraved religions, insomuch that the pollutions of heretics are worse than the Bacchanalian orgies of the heathen; whose superstitions likewise have been no less bloody than foul. Neither again is it wonderful that phrenises are thought to be inspired by Bacchus; since every passion, in the excess thereof, is like a short madness, and if it continue vehement and obstinate, commonly ends in insanity. And that circumstance of the tearing to pieces of Pentheus and Orpheus amid the orgies of Bacchus, has an evident allegorical meaning; for every ruling passion is extremely hostile and inveterate against two things; whereof the one is curious inquisition; the other, free and wholesome advice. Nor does it make any difference if that inquisition be merely for the sake of looking on, as from a tree, without any ill-feeling; nor again if the advice be tendered ever so sweetly and skilfully; for the orgies cannot upon any conditions endure either Pentheus or Orpheus. Lastly, the confusion of the persons of Jupiter and Bacchus may well be taken in an allegorical sense. For noble and illustrious actions and glorious and distinguished services proceed sometimes from virtue, right reason, and magnanimity; and sometimes (however they are extolled and applauded without distinction) only from lurking passion and hidden desire; and thus the deeds of Bacchus are not easily distinguished from the deeds of Jupiter [16].

But we stay too long in the theatre; let us now pass to the palace of the mind, which we are to approach and enter with more reverence and attention.

[16] It seems not improbable that Bacon was led to consider the ancient mythology from the point of view which he has illustrated both here and in the *Wisdom of the Ancients*, by an author with many of whose writings he was familiar. Plutarch's treatise *De Iside et Osiride* is very much in the same manner.

Book III

CHAPTER I.

Division of Science into Theology *and* Philosophy. *Division of Philosophy into three doctrines ; concerning the* Deity, *concerning* Nature, *and concerning* Man. *Constitution of* Primary Philosophy, *as the common mother of all.*

ALL History, excellent King, walks upon the earth, and performs the office rather of a guide than of a light ; whereas Poesy is as a dream of learning ; a thing sweet and varied, and that would be thought to have in it something divine ; a character which dreams likewise affect. But now it is time for me to awake, and rising above the earth, to wing my way through the clear air of Philosophy and the Sciences.

The knowledge of man is as the waters. Some waters descend from above, and some spring from beneath ; and in like manner the primary division of sciences is to be drawn from their sources ; of which some are above in the heavens, and some here below. For all knowledge admits of two kinds of information ; the one inspired by divine revelation, the other arising from the senses. For as to that knowledge which man receives by teaching, it is cumulative and not original ; as it is likewise in waters, which beside their own springheads, are fed with other springs and streams. I will therefore divide knowledge into Divinity and Philosophy ; meaning by Divinity Sacred or Inspired, not Natural Divinity ; of which I will speak hereafter. But this (namely, Inspired Divinity) I will reserve to the end, that with it I may conclude my discourse ; being as it is the haven and sabbath of all human contemplations.

The object of philosophy is threefold—God, Nature, and Man ; as there are likewise three kinds of ray—direct, refracted, and reflected. For nature strikes the understanding with a ray direct ; God, by reason of the unequal medium (viz. his creatures), with a ray refracted ; man, as shown and exhibited to himself, with a ray reflected[1]. Philosophy may therefore be conveniently divided into three branches of knowledge : knowledge of God, knowledge of Nature, and knowledge of Man, or Humanity. But since the divisions of knowledge are not like several lines that meet in one angle ; but are rather like branches of a tree that meet in one stem (which stem grows for some distance entire and continuous, before it divide itself into arms and boughs) ; therefore it is necessary, before we enter into the branches of the former division, to erect and constitute one universal science, to be as the mother of the rest, and to be regarded in the pro-

[1] The parallel which naturally suggests itself between light and knowledge has by several writers been traced in the modifications of which light is susceptible. Thus Roger Bacon, at the close of his *Perspectiva*, likens vision by direct light to divine knowledge, by refracted light to angelic knowledge, and by reflected light to human ; and again to man's knowledge in the state of glory, " facie ad faciem," to his knowledge in the intermediate state, and to that which he has in this present life ; " et hæc est recte per reflexionem, secundum quod dicit apostolus, Videmus nunc per speculum in ænigmate ". And in this life also vision is triple : " scilicet recta in perfectis, fracta in imperfectis ; et in malis et in negligentibus mandata Dei, est etiam per reflexionem," an assertion in support of which he quotes S. James, i. 23. and 24. But all these illustrations differ from that in the text, inasmuch as they relate to the different kinds of knowledge which appertain to different orders and states of being, and not to the differences which arise from the nature of the object. For a nearer parallel, at least with respect to the radius reflexus, see Plutarch *De Curiositate*, c. 3.

gress of knowledge as portion of the main and common way, before we come where the ways part and divide themselves. This science I distinguish by the name of *Philosophia Prima*, primitive or summary philosophy; or *Sapience*, which was formerly defined as the knowledge of things divine and human. To this no other is opposed; for it differs from the rest rather in the limits within which it ranges than in the subject matter; treating only of the highest stages of things. Which science whether I should report as deficient or not, I stand doubtful, though I rather incline to do so. For I find a certain rhapsody and incongruous mass of Natural Theology, of Logic, and of some parts of Natural Philosophy (as those concerning First Principles and the Soul), all mixed up and confused, and in the lofty language of men who take delight in admiring themselves advanced as it were to the pinnacle of the sciences. But setting all high conceits aside, my meaning is simply this: that a science be constituted, which may be a receptacle for all such axioms as are not peculiar to any of the particular sciences, but belong to several of them in common.

Now that there are very many axioms of that kind need not be doubted. For example, "if equals be added to unequals the wholes will be unequal," is a rule of mathematics. The same holds in ethics, as regards distributive justice; for in commutative justice the rule of equity requires that equals be given to unequals; whereas in distributive, if unequals be not given to unequals there is the greatest injustice [2]. Again "things that are equal to the same are equal to one another," is likewise a rule of mathematics; but it is at the same time so potent in logic as to be the basis of the syllogism. "The nature of everything is best seen in its smallest portions [3]," is a rule in Physics of such force that it produced the atoms of Democritus; and yet Aristotle made good use of it in his Politics, where he commences his inquiry of the nature of a commonwealth with a family. "All things are changed and nothing is lost [4]," is in like manner a rule in Physics, exhibited thus, "The Quantum of nature is neither diminished nor increased". The same holds in Natural Theology, with this variation, "It is the work of omnipotence to make somewhat nothing, and to make nothing somewhat;" which likewise the Scripture testifies; "I know that whatsoever God doeth, it shall be for ever; nothing can be put to it, nor anything taken from it [5]". "Things are preserved from destruction by bringing them back to their first principles," is a rule in Physics; the same holds good in Politics (as Machiavelli rightly observed), for there is scarcely anything which preserves states from destruction more than the reformation and reduction of them to their ancient manners [6]. "Putrefaction is more contagious before than after maturity," is a rule in Physics; the same is eminently true in Morals, for the men who are most wicked and profligate produce less corruption in the public manners than those who appear to have some soundness and virtue in them, and are only partly evil. "Whatever is preservative of a greater Form is more powerful in action," is a rule in Physics; for that the connexion of things should not be severed, nor a vacuum (as they call it) admitted, tends to preserve the fabric of the universe; whereas the collection of heavy bodies towards the mass of the earth tends to preserve only the region of dense bodies; and therefore the first motion overcomes the last. The same holds in Politics; for whatsoever contributes to preserve the whole state in its own nature, has greater power than that which only benefits the particular members of that state. It holds likewise in Theology; for of the theological virtues, charity, which is the virtue most communicative of good, excels all the rest. "The force of an agent is increased by the reaction of a contrary," is a rule in Physics [7]. The same has

[2] Cf. Arist. *Nic. Eth.* v. 3, 4, 5.

[3] This passage has been already quoted, B. II., c. 2.

[4] Ovid. *Metam.* xv. 165.

[5] Ecclesiastes, iii. 14.

[6] Machiavelli, *Discorsi*, § 1.

[7] The doctrine of Antiperistasis, that is of the increase of intensity of one of two contraries by the juxtaposition of the other, is applied by Aristotle, *Meteor.* i. c. 13, in the case of heat and cold, to explain the formation of hail. It is formally and generally stated in Averroës's commentary on this passage. See also Arist. *Probl.* ii. 16., and Plutarch's *Quæst. Naturales.*

wonderful efficacy in Politics, since every faction is violently irritated by the encroachment of a contrary faction. "A discord ending immediately in a concord sets off the harmony," is a rule in Music. The same holds in Ethics and in the affections. The trope of Music, to glide gently from the close of cadence (as they call it) when you seem to be on the point of it, resembles the trope of Rhetoric, of deceiving expectation. The quavering upon a stop in music gives the same pleasure to the ear as the playing of light on water or a diamond gives to the eye;

—— splendet tremulo sub lumine pontus [8].

"The organs of the senses resemble the organs of reflexions," is a rule in Perspective; for the eye is like to a glass [9], or to water; and it is the same in Acoustics, for the instrument of hearing is like an obstruction in a cavern. These few cases are enough by way of examples. But indeed the chief business of the Persian magic (so much celebrated) was to note the correspondences between the architectures and fabrics of things natural and things civil [10]. Neither are all these which I have mentioned, and others of this kind, only similitudes (as men of narrow observation may perhaps conceive them to be), but plainly the same footsteps of nature treading or printing upon different subjects and matters. And it is a thing which has not as yet been carefully handled. You may perhaps find in the writings of the profounder sort of wits such axioms here and there sparingly inserted for the use of the argument they have in hand; but for any body of such axioms, which should tend primitively and summarily to the advancement of the sciences, no one has as yet collected one; though it is a thing of excellent use for displaying the unity of nature; which is supposed to be the true office of Primitive Philosophy.

There is also another part of this philosophy, which, if you look to the terms, is ancient, if to the thing which I mean, is new. It is an inquiry with regard to the Adventitious Conditions of Essences (which we may call Transcendentals) as Much, Little; Like, Unlike; Possible, Impossible; likewise Being and Not Being, and the like. For since these do not properly come under Physic, and the logical discussion concerning them belongs rather to the laws of reasoning than to the existence of things, it is very proper that the consideration of them (wherein there is no little dignity and profit) should not be altogether neglected, but should find at least some place in the divisions of the sciences. Nevertheless I mean that it should be handled in a way very different from the common. For example: no one who has treated of Much and Little has endeavoured to assign a reason why some things in nature are and can be so numerous and plentiful, others so few and scanty; for it certainly cannot be that in the nature of things there should be as much gold as iron; that roses should be as abundant as grass;

[8] Virg. *Æn.* vii. 9. :—Beneath the trembling light glitters the sea.

[9] Orig. *Speculum.* That the word speculum is here used for "a glass" appears from the corresponding passage in the *Advancement of Learning.* This use of the word, though certainly uncommon, is sanctioned by the authority of C. Agrippa, who, distinguishing lenses from mirrors, calls the former "specula perspicua". See his celebrated work, *De incertitudine et vanitate scientiarum,* with which Bacon seems, though he has spoken with undeserved contempt of its author, to have been familiar. The phrase used by S. Paul, "we see through a glass," is in the Vulgate "videmus per speculum," but it is at least doubtful whether in both versions it was not intended to suggest the idea of vision by reflected light; so that the authority of the English translators cannot be cited in support of Bacon's use of the word "speculum;" though on the other hand there are commentators who affirm that the word used in the original (*ἐσόπτρον*) means what in Latin is denoted by "speculare," in which case the vision *δι ἐσόπτρου* is of course by transmitted light.

[10] The system of Zoroaster, with which we are but imperfectly acquainted, was at one time the subject of almost as many idle fancies as the philosophy of Hermes Trismegistus. The first idea of the connexion between the Persian magic and the art of government was suggested by the circumstance mentioned in the *Alcibiades* of Plato—that the princes of Persia were by the same persons instructed in politics and in magic.

and that there should be as great variety of the specific as of the non-specific. In like manner no one in handling Similitude and Diversity has sufficiently explained why betwixt different species there almost always lie certain individuals which partake of the nature of both; as moss between corruption and a plant; fishes that stick to rocks and cannot move away, between a plant and an animal; rats and mice, and some other things, between animals generated of putrefaction and of seed; bats, between birds and beasts; flying-fish (which are now well known), between birds and fishes; seals, between fishes and quadrupeds; and the like. Nor has any one inquired the reason why, seeing that likes delight in likes, iron does not attract iron, which the magnet does; nor why gold does not attract gold, though it does attract quicksilver. With regard to these and similar things in the discussion of Transcendentals there is a deep silence; for men have aimed rather at height of speech than at the subtleties of things. Wherefore I wish the real and solid inquiry, according to the laws of nature and not of language, concerning these Transcendentals or Adventitious Conditions of Essences, to have a place in Primitive or Summary Philosophy. And so much for *Philosophia Prima* (or Sapience), which I have with reason set down as deficient.

CHAPTER II.

Of Natural Theology; *and the Doctrine concerning* Angels *and* Spirits, *which is an Appendix of the Same.*

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

> Omnes cœlicolas, omnes supera alta tenentes[1],

let us return to the former division of the three philosophies: Divine, Natural, and Human. For Natural Theology is also rightly called Divine Philosophy. It is defined as that knowledge, or rather rudiment of knowledge, concerning God, which may be obtained by the light of nature and the contemplation of his creatures; and it may be truly termed divine in respect of the object, and natural in respect of the light. The bounds of this knowledge, truly drawn, are that it suffices to refute and convince Atheism, and to give information as to the law of nature; but not to establish 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 idolators and the superstitious, who acknowledged a deity but erred in his worship; because no light of nature extends to declare the will and worship of God. For as all works show forth the power and skill of the workman, and not his image; so it is of the works of God; which show the omnipotency and wisdom, but do not portray the image of the Maker. And therefore therein the Heathen opinion differs from the sacred truth; for they supposed the world to be the image of God, and man the image of the world; whereas the Scriptures never vouchsafe to attribute to the world such honour as anywhere to call it the image of God, but only the work of his hands; but man they directly term the image of God. Wherefore that God exists, that he governs the world, that he is supremely powerful, that he is wise and prescient, that he is good, that he is a rewarder, that he is an avenger, that he is an object of adoration—all this may be demonstrated from his works alone; and there are many other wonderful mysteries concerning his attributes, and much more touching his regulations and dispensations over the universe, which may likewise be reasonably elicited and manifested from the same; and this is an argument that has by some been excellently handled. But on the other side, out of the contemplation of nature and elements of human knowledge to induce any conclusion of reason or even any strong persuasion concerning the mysteries of faith, yea, or to inspect and sift them too curiously and search out the manner of the mystery, is in my opinion not safe. "Give unto faith the things which are faith's". For the Heathen themselves

[1] Virg. *Æn.* vii. 788:—All gods, all dwelling in the heights of heaven.

concede as much, in that excellent and divine fable of the Golden Chain ; namely, 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. And therefore it were a vain labour to attempt to adapt the heavenly mysteries of religion to our reason Fitter will it be that we raise our own minds to the adorable throne of heavenly truth. In this part therefore of Natural Theology I am so far from noting any deficience, that I rather find an excess; to note which I have a little digressed, because of the extreme prejudice and peril which is thereby threatened both to religion and philosophy ; as being that which will make at once an heretical religion and an imaginary and fabulous philosophy.

Otherwise it is of the nature of Angels and Spirits, which is neither inscrutable nor interdicted ; unto which likewise, from the affinity it bears to the human soul, the passage is in great part opened. Certainly the Scripture says, " Let no man deceive you in sublime discourse, touching the worship of angels, pressing into that he knoweth not " [2] ; yet notwithstanding if you observe well that precept, you will find that there are two things only forbidden therein : adoration of them, such as is only due to God, and opinion fantastical of them ; either to extol them further than appertains to the degree of a creature, or to extol a man's knowledge of them further than he has ground. But the sober inquiry about them, either ascending to the knowledge of their nature by the ladder of things corporeal, or beholding it in the soul of man as in a mirror, is nowise forbidden. So of unclean and fallen spirits [3], the conversing with them or the employment of them is prohibited ; much more any worship or veneration towards them. But the contemplation and knowledge of their nature, power and illusions, not only from passages of Scripture, but from reason or experience, is not the least part of spiritual wisdom. So certainly says the Apostle, " We are not ignorant of his stratagems [4] ". And it is no more unlawful to inquire the nature of evil spirits in Natural Theology, than to inquire the force of poisons in Physics, or the nature of vice in Ethics. But this part of knowledge touching angels and spirits I cannot note as deficient, seeing many have occupied themselves in it. I may rather challenge no small part of it, in many of the writers thereof, as superstitious, fabulous, and fantastical.

[2] Coloss. ii. 4. and 18.

[3] The theory of angels and that of fallen spirits form a large and not very profitable chapter in every scholastic Summa Theologiæ. The dogmatic basis of these speculations consists chiefly of spiritualising interpretations (sanctioned by the Fathers and especially by S. Augustine) of certain texts of Scripture and of the supposed visions of Dionysius the Areopagite. The theory of the angelic nature (both in its first and in its fallen state) which the ingenuity of the schoolmen elaborated from these data, is a most remarkable instance of metaphysical creation ; being no less than a determination of the conditions of thought and volition which exist among intelligences of a higher order than our own. That all such determinations are utterly unsatisfactory, both from the want of data and from the inherent and insurmountable difficulty of the problem to be solved, is not however to be denied.

I am not concerned to defend what the schoolmen have said upon the subject ; but I may be allowed to mention in connexion with it an instance of the flippant ignorance with which they are often spoken of. It is said in the history of Martinus Scriblerus that they discussed the question whether angels know things best in the morning. The assertion is of course founded on an absurd mistake of the meaning of the inquiry, " utrum matutina cognitio potior sit quam vespertina ". The doctrine of matutinal and vespertinal cognition the schoolmen derive from S. Augustine, and though neither its subtlety nor the eloquence with which it is expressed can prevent its being censured as an unauthorised speculation, yet no wise man will think it a matter to be jested with. I may refer with respect to it to Buonaventura's commentary on the second book of the *Sentences* of Peter Lombard : *Distinctio* 4 : *Quæstio* 2. The " conclusio " is, " Angelus bonus habet cum matutina vespertinam quoque cognitionem, quæ non temporis sed dignitatis inter se habent ordinem ".

[4] 2 Corinth. ii. 11.

CHAPTER III.

The division of Natural Philosophy into Speculative *and* Operative; *and that these two should be kept separate, both in the intention of the writer and in the body of the treatise.*

Leaving therefore Natural Theology (to which I refer the inquiry concerning Spirits as an appendix), let us now proceed to the second part; namely, that concerning Nature and Natural Philosophy. It was well said by Democritus "That the truth of nature lies hid in certain deep mines and caves[1]". It was not ill said by the alchemists, "That Vulcan is a second nature, and imitates that dexterously and compendiously which nature works circuitously and in length of time". Why therefore should we not divide Natural Philosophy into two parts, the mine and the furnace; and make two professions, or occupations of natural philosophers, some to be miners and some to be smiths? And certainly though I may seem to say this in sport, yet I think a division of this kind most useful, when propounded in familiar and scholastical terms; namely, that the doctrine of Natural Philosophy be divided into the Inquisition of Causes, and the Production of Effects; Speculative and Operative. The one searching into the bowels of nature, the other shaping nature as on an anvil. And though I am well aware how close is the intercourse between causes and effects, so that the explanations of them must in a certain way be united and conjoined; yet because all true and fruitful Natural Philosophy has a double scale or ladder, ascendent and descendent, ascending from experiments to axioms, and descending from axioms to the invention of new experiments; therefore I judge it most requisite that these two parts, the Speculative and the Operative, be considered separately, both in the intention of the writer and in the body of the treatise.

CHAPTER IV.

The division of Speculative doctrine concerning nature into Physic (*special*) *and* Metaphysic. *Whereof Physic inquires of the* Efficient Cause *and the* Material; *Metaphysic of the* Final Cause *and the* Form. *The division of Physic* (*special*) *into the doctrine concerning the* Principles of Things, *concerning the* Fabric of Things, *or the world, and concerning the* Variety of Things. *The division of the doctrine concerning the Variety of Things into doctrine concerning things* Concrete, *and doctrine concerning things* Abstract. *The division of the doctrine concerning things Concrete is referred to the same divisions which Natural History receives. The division of the doctrine concerning things Abstract into doctrine concerning the* Configurations of Matter *and doctrine concerning* Motions. *Two Appendices of Speculative Physic,* Natural Problems *and* Dogmas of the Ancient Philosophers. *The division of Metaphysic into doctrine concerning* Form *and the doctrine concerning* Final Causes.

That part of Natural Philosophy which is Speculative and Theoretical, we may divide into Physic special, and Metaphysic; wherein I desire men to observe that I use the word *metaphysic* in a different sense from that which is commonly received. And here it may be convenient to explain my general purpose touching the use of terms; which is, as well in this term of metaphysic, as in other cases where my conceptions and notions are novel and differ from the ancient, to retain with scrupulous care the ancient terms; for hoping well that the very order of the matter and the clear explanation which I give of everything will prevent the words I use from being misunderstood, I am otherwise zealous (as far as may stand with truth and the proficience of knowledge) to recede as little as possible from antiquity, either in terms or opinions. And herein I cannot a little marvel at the boldness of Aristotle, who was stirred by such a spirit of difference and contradiction to wage war on all antiquity, undertaking not only to coin new words of science at pleasure, but to extinguish and obliterate all ancient wisdom; insomuch that he never names or mentions an ancient author or opinion but to reprove the one and refute the other. For glory, indeed, and drawing followers and disciples, he took the right course therein. For certainly in the promulga-

[1] Diog. Laërt. in Pyrrho. c. 72.

tion and reception of philosophic truth the same thing comes to pass that was noted in the case of divine truth; "I came in my Father's name, and ye received me not; if one shall come in his own name, him ye will receive[1]". But in this divine aphorism, if we consider to whom it was applied (namely, to Anti-Christ, the highest deceiver of all ages), we may discern this well, that the coming in a man's own name, without regard of antiquity or (so to say), of paternity, is no good sign of truth, though it be oftentimes joined with the fortune and success of "Him ye will receive." But of Aristotle, so excellent a person as he was, and so wonderful for the acuteness of his mind, I can well believe that he learnt that humour from his scholar, whom perhaps he emulated; the one aspiring to conquer all nations, the other to conquer all opinions, and to establish for himself a kind of despotism in thought. Wherein nevertheless, it may be, he may at some men's hands, who are of a bitter temper and a sharp tongue, get a like title as his scholar did;

Felix terrarum prædo, non utile mundo
Editus exemplum[2]:

so

Felix doctrinæ prædo, etc.

But to me on the other side (who desire, as much as lies in my pen, to ground a sociable intercourse between the old and the new in learning) it seems best to keep way with antiquity in all things lawful, and to retain the ancient terms, though I often alter their sense and definitions; according to the moderate and approved course of innovation in civil matters, by which, when the state of things is changed, yet the forms of words are kept; as Tacitus remarks, "The names of the magistrates are the same[3]".

To return therefore to the use and acceptation of the term *metaphysic*, as I understand the word. It appears by that which has been already said, that I intend Primitive or Summary Philosophy and Metaphysic, which heretofore have been confounded as one, to be two distinct things. For the one I have made a parent or common ancestor to all knowledge; the other, a branch or portion of Natural Philosophy. Now I have assigned to Primitive Philosophy the common principles and axioms which are promiscuous and indifferent to several sciences. I have assigned to it likewise the question of the Relative and Adventitious Conditions of Essences (which I have termed Transcendentals); as Much, Little Like, Unlike; Possible, Impossible, and the rest; with this provision alone, that they be handled as they have efficacy in nature, and not logically. But the inquiry concerning God, Unity, the nature of Good, Angels and Spirits, I have referred to Natural Theology. It may fairly therefore now be asked, what is left remaining for Metaphysic? Certainly nothing beyond nature; but of nature itself much the most excellent part. And herein without prejudice to truth I may preserve thus much of the conceit of antiquity, that Physic handles that which is most inherent in matter and therefore transitory, and Metaphysic that which is more abstracted and fixed. And again, that Physic supposes in nature only a being and moving and natural necessity; whereas Metaphysic supposes also a mind and idea. For that which I shall say comes perhaps to this. But avoiding all height of language, I will state the matter perspicuously and familiarly. I divided Natural Philosophy into the Inquiry of Causes and the Production of Effects. The Inquiry of Causes I referred to the Theoretical part of Philosophy. This I subdivide into Physic and Metaphysic. It follows that the true difference between them must be drawn from the nature of the causes that they inquire into. And therefore to speak plain and go no further about, Physic inquires and handles the Material and Efficient Causes, Metaphysic the Formal and Final.[4]

[1] St. John, v. 43.

[2] Cf. Lucan, x. 21.:—Great thief of nations, to the world sent forth
A dangerous precedent.
Great thief of learning, etc.
[Bacon has misquoted the passage.]

[3] Tac. Ann. i. 3.

[4] The classification of causes here referred to is Aristotle's. In the first book of the

Physic then comprehends causes vague, variable, respective; but does not aspire to the constant.

> Limus ut hic durescit, et hæc ut cera liquescit,
> Uno eodemque igne [5].

Fire is the cause of induration, but respective to clay; fire is the cause of colliquation, but respective to wax. Now I will divide Physic into three doctrines. For nature is either united and collected, or diffused and distributed. Nature is collected into one, either by reason of the community of the principles of all things, or by reason of the unity of the integral body of the universe. And thus this union of nature has begot two departments of Physic; the one concerning the first principles of things, the other concerning the structure of the universe or the world; which parts I have likewise usually termed the doctrines concerning the Sums of Things. The third doctrine (which handles nature diffused or distributed) exhibits all the varieties and lesser sums of things. Hence it appears that there are three physical doctrines in all: concerning the principles of things; concerning the world or structure of the universe; and concerning nature manifold or diffused. Which last, as I have said, includes all variety of things, and is but as a gloss or paraphrase attending upon the text of natural history. Of these three I cannot report any as totally deficient; but in what truth or perfection they are handled, I make not here any judgment.

But Physic diffused, which touches on the variety and particularity of things, I will again divide into two parts: Physic concerning things Concrete, and Physic concerning things Abstract; or Physic concerning Creatures and Physic concerning Natures. The one (to make use of logical terms) inquires concerning substances, with every variety of their accidents; and the other, concerning accidents, through every variety of substances. For example, if the inquiry be about a lion, or an oak, these support many different accidents; if contrariwise, it be about heat or gravity, these are found in many different substances. But as all Physic lies in a middle term between Natural History and Metaphysic, the former part (if you observe rightly) comes nearer to Natural History, the latter to Metaphysic. Concrete Physic is subject to the same division as Natural History; being conversant either with the heavens or meteors, or the globe of earth and sea, or the greater colleges, which they call the elements, or the lesser colleges or species, as also with pretergenerations and mechanics. For in all these Natural History investigates and relates the fact, whereas Physic likewise examines the causes; I mean the variable causes, that is, the Material and Efficient. Among these parts of Physic, that which inquires concerning the heavenly bodies is altogether imperfect and defective, though by reason of the dignity of

Metaphysics he has applied it, with singular felicity, to the history of philosophical speculation. In order to apprehend its nature, it is necessary to take the word cause in a wider signification than is ordinarily done.

The efficient cause is that which acts—the material cause that which is acted on, as when the fire melts wax, the former is the efficient, the latter the material cause of the effect produced. The formal cause is that which in the case of any object determines it to be that which it is, and is thus the cause of its various properties; it is thus the "ratio essentiæ", the "λόγος τῆς οὐσιας". The final cause is that for the sake of which any effect takes place, whether the agent is or is not intelligent; semper enim *intenditur* finis, non autem semper *cognoscitur*. These four kinds of causes may be divided into two classes, extrinsic and intrinsic; the efficient and final belonging to the first class, the material and formal to the second. It is obvious that these distinctions involve the postulate of what has been called the theory of physical influence, that is, that one substance really acts on another, and must at least be modified if we adopt any such theory on this subject as that of Leibnitz or of Herbart.

[5] Virg. *Ecl.* viii. 80:—

> As the same fire which makes the soft clay hard,
> Makes hard wax soft.

the subject it deserves special consideration. Astronomy has indeed a good foundation in phenomena, yet it is weak, and by no means sound ; but astrology is in most parts without foundation even. Certainly astronomy offers to the human intellect a victim like that which Prometheus offered in deceit to Jupiter. Prometheus, in the place of a real ox, brought to the altar the hide of an ox of great size and beauty, stuffed with straw and leaves and twigs. In like manner astronomy presents only the exterior of the heavenly bodies (I mean the number of the stars, their positions, motions, and periods), as it were the hide of the heavens ; beautiful indeed and skilfully arranged into systems ; but the interior (namely the physical reasons) is wanting, out of which (with the help of astronomical hypotheses) a theory might be devised which would not merely satisfy the phenomena (of which kind many might with a little ingenuity be contrived), but which would set forth the substance, motion, and influence of the heavenly bodies as they really are. For long ago have those doctrines been exploded of the Force of the First Mover and the Solidity of the Heaven,—the stars being supposed to be fixed in their orbs like nails in a roof. And with no better reason is it affirmed, that there are different poles of the zodiac and of the world ; that there is a Second Mover of counteraction to the force of the first ; that all the heavenly bodies move in perfect circles ; that there are eccentrics and epicycles whereby the constancy of motions in perfect circles is preserved ; that the moon works no change or violence in the regions above it ; and the like. And it is the absurdity of these opinions that has driven men to the diurnal motion of the earth ; which I am convinced is most false. But there is scarce any one who has made inquiries into the physical causes, as well of the substance of the heavens both stellar and interstellar, as of the relative velocity and slowness of the heavenly bodies ; of the different velocity of motion in the same planet ; of the course of motions from east to west, and contrary ; of their progressions, stationary positions, and retrogressions ; of the elevation and fall of motions in apogee and perigee ; of the obliquity of motions, either by spirals winding and unwinding towards the Tropics, or by those curves which they call *Dragons* [6] ; of the poles of rotation, why they are fixed in such part of the heaven rather than in any other ; and of some planets being fixed at a certain distance from the sun :—such an inquiry as this (I say) has hardly been attempted ; but all the labour is spent in mathematical observations and demonstrations. Such demonstrations however only show how all these things may be ingeniously made out and disentangled, not how they may truly subsist in nature ; and indicate the apparent motions only, and a system of machinery arbitrarily devised and arranged to produce them,—not the very causes and truth of things [7]. Wherefore astronomy ,

[6] The word Draco is mostly used with reference to the Moon's orbit, and denotes the two zones included between it and the ecliptic ; the nodes being respectively the Caput and Cauda Draconis. The symbols which are still used both for the nodes of the moon's orbit and for those of other orbits seem derived from this use of the word Draco.

[7] It is difficult to know what mode of investigation Bacon here intends to recommend. The problem of astronomy necessarily is, before any investigation as to the causes of the motions of the heavenly bodies can be undertaken, to determine what those motions really are. The distinction between real motions and apparent motions must be recognised before any progress can be made. And this distinction is not between a fact and a theory in the common acceptation of the words, but between a right theory and a wrong one. Bacon complains that the physical causes of the occasional immobility and regression of the planets have not been inquired into ; but in this complaint is involved the theoretic assumption that the planets really are stationary and really do regress. This assumption is made in order to account for their appearing to us to change the direction of their motion. It is the obvious explanation, but nevertheless a wrong one ; and if the phenomena in question are not physical phenomena but optical, to what purpose is it to attempt to assign physical causes for them ? And so in the other cases which he mentions. The value of any hypothesis for the explanation of the phenomena of course depends on its simplicity and its completeness, and the attempt to reduce all the celestial motions to perfect circles was at the time at which it was made a great step in advance ; though the idea of circular motion was unduly retained when it was found to

as it now is, is fairly enough ranked among the mathematical arts, not without disparagement to its dignity; seeing that, if it chose to maintain its proper office, it ought rather to be accounted as the noblest part of Physics. For whoever shall set aside the imaginary divorce between superlunary and sublunary things, and shall well observe the most universal appetites and passions of matter (which are powerful in both globes and make themselves felt through the universal frame of things), will obtain clear information of heavenly things from those which are seen amongst us; and on the other hand, from that which passes in the heavens he will gain no slight knowledge of some motions of the lower world as yet undiscovered; not only in as far as the latter are influenced by the former, but in as far as they have common passions[8]. Wherefore this, the physical part of astronomy, I pronounce deficient; giving it the name of *Living Astronomy*, in distinction from that stuffed ox of Prometheus, which was an ox in figure only.

As for Astrology, it is so full of superstition, that scarce anything sound can be discovered in it. Notwithstanding, I would rather have it purified than altogether rejected. If however anyone maintains that this science is not based on reason or physical speculations, but on blind experience and the observations of many ages, and on that ground refuses the test of physical reasons (as the Chaldeans professed to do): he may on the same grounds bring back auguries, and believe in divination, entrails, and all kinds of fables; for all these are set forth as the dictates of long experience and traditions passed from hand to hand. But for my part I admit astrology as a part of Physic, and yet attribute to it nothing more than is allowed by reason and the evidence of things, all fictions and superstitions being set aside. To consider the matter however a little more attentively. In the first place what an idle invention is that, that each of the planets reigns in turn for an hour, so that in the space of twenty-four hours each has three reigns, leaving three hours over! And yet this conceit was the origin of our division of the week (a thing so ancient and generally received); as is very evident from the alternation of days; for the ruling planet at the beginning of the succeeding day is always the fourth in order from the planet of the previous one, by reason of the three supernumerary hours of which I have spoken[9]. Secondly, I do not hesitate to reject as an idle superstition the doctrine of horoscopes and the distribution of houses; which is the very delight of astrology, and has held a sort of Bacchanalian revelry in the heavenly regions. Nor can I

be producing not simplicity but complication. But consciously or unconsciously the mind is always introducing principles of arrangement (ideas or hypotheses) among the objects of its attention, and the error of the passage in the text is in effect the common one of assuming that the form of hypothesis with which the mind happens to be familiar is on that account an absolute fact. It is well to remark, as the Newtonian philosophy is often spoken of as the great result of Bacon's methods, that none of Newton's astronomical discoveries could have been made, if astronomers had not continued to render themselves liable to Bacon's censure.

[8] This prediction has been fulfilled by the history of physical astronomy, and the information gained respecting the "motus inferiores" may be divided into two parts, "quatenus hi ab illis regantur" and "quatenus habeant passiones communes". To the first belong the theory of the tides and those of precession and nutation, to the second that of the earth's figure, which depends on the law of universal gravitation, and which therefore may be said to be a result of our knowledge of celestial phenomena. The way in which what takes place in one part of the solar system is, so to speak, reflected in others, is one of the most interesting subjects in physical astronomy.

[9] This explanation of the origin of the names of the days of the week is given by Dio Cassius, xxxvii. c. 21. He also gives another which is free from an objection which has been alleged against the first; namely that the names are older than the division of the day into twenty-four hours. It is that the successive days were assigned to the respective planets which are fourth in order from each other, from some notion of analogy in the divine harmony to a musical progression by fourths. Joseph Scaliger, as quoted by Selden, deduces the order of progression from the properties of a heptagon inscribed in a circle. See on this subject a very learned essay by Archdeacon Hare in the first volume of the *Philological Museum*.

sufficiently wonder how illustrious men and eminent in astrology have rested them on such slight foundations; for they say that as experience proves that the solstices, equinoxes, new moons, full moons, and the greater revolutions of the stars, exercise a great and manifest influence over natural bodies, it follows that the more exact and subtle positions of the stars must produce effects likewise more exquisite and secret. But they ought first to have excepted the operations of the sun by manifest heat, and likewise the magnetic influence of the moon on the half-monthly tides (for the daily ebb and flow of the sea is another thing), and then they will find the powers of the rest of the planets over natural things (as far as they are approved by experience) very weak and slight, and almost invisible, even in the greater revolutions. And therefore they should argue in a manner directly contrary; that as those greater revolutions have so little influence, these nice and minute differences of positions have no power at all. Thirdly, those fatalities, that the hour of nativity or conception influences the fortune of the birth, the hour of commencement the fortune of the enterprise, the hour of inquiry the fortune of the thing inquired into, and in short, the doctrines of *nativities, elections, inquiries*, and the like frivolities, have in my judgment for the most part nothing sure or solid, and are plainly refuted and convicted by physical reasons. It remains therefore to declare what I retain or approve of in astrology, and what is deficient in that which I approve. For this last it is (the pointing out of deficiencies) which is the object of this discourse; for otherwise (as I have often said) I cannot stay to censure. Among the received doctrines, then, I think that concerning *revolutions* has more soundness than the rest. But it will perhaps be better to lay down certain rules, as a standard by which we may weigh and examine astrological matters, so as to retain what is useful and to reject what is frivolous. First then, as I have before advised, let the greater revolutions be retained, but the smaller revolutions of horoscopes and houses be dismissed[10]. The former are like great guns, and can strike from afar; the latter are like little bows, and cannot transmit their force over much space. Secondly; the operation of the heavenly bodies does not affect all kinds of bodies, but only the more tender; such as humours, air and spirit; here however the operations of the heat of the sun and heavenly bodies must be excepted; which doubtless penetrates both to metals and to a great number of subterraneous bodies. Thirdly every operation of heavenly bodies extends rather to masses than to individuals; though it affects indirectly some individuals also; such, namely, as are more susceptible, and of softer wax as it were, than the rest of their species; as when a pestilent condition of air seizes on the less resisting bodies and passes by those which have more power of resistance. The fourth rule is not unlike the preceding; every operation of the heavenly bodies sheds its influence and power, not on small periods of time or within narrow limits, but upon the larger spaces. And therefore predictions of the temperature of the year may possibly be true; but those of particular days are rightly held of no account. The last rule (which has always been held by the wiser astrologers) is that there is no fatal necessity in the stars[11], but that they rather incline than compel. I will add one thing besides (wherein I shall certainly seem to take part with astrology, if it were reformed); which is, that I hold it for certain that the celestial bodies have in them certain other influences besides heat and light; which very influences however act by those rules laid down above, and not otherwise. But

[10] The heavens are in astrology divided into twelve compartments or houses, by means of six great circles which pass through the north and south points of the horizon, and divide the ecliptic into twelve equal portions. One of these circles coincides with the horizon, and the point of the ecliptic through which it passes at the moment of the nativity of the person whose destiny is to be ascertained, or of the commencement of the event whose fortunes are to be predicted, is called the horoscope. These divisions are spoken of by Sextus Empiricus, who with Julius Firmicus is our earliest authority on the subject of astrology. He seems rather to give the name of houses to definite signs of the Zodiac than to the divisions of which we have been speaking; a sense in which the term is also used by later writers.

[11] This saying is commonly ascribed to Ptolemy.

these lie concealed in the depths of Physic, and require a longer dissertation. I have thought fit therefore (on due consideration of what has been said) to set down as a desideratum an astrology framed in conformity with these principles; and as I have termed Astronomy based on Physical Reasons *Living Astronomy*, so Astrology similarly grounded I call *Sane Astrology*. And though what I have already said will in no slight degree contribute to the rectification and completion of this art, yet according to my custom I will add a few remarks which will clearly explain out of what materials it should be composed, and to what end it should be applied. In the first place, let there be received into Sane Astrology the doctrine concerning the commixture of rays; that is the conjunctions, oppositions, and other combinations or aspects of planets with regard to one another. And to this same part also I refer the passage of the planets through the signs of the zodiac, and their position under the same signs; for the position of a planet under a sign is a kind of conjunction of it with the stars of that sign. And in like manner also ought the oppositions and other combinations of the planets with regard to the stars of the signs to be observed; which has not hitherto been fully done. But these commixtures of the rays of fixed stars with one another, though useful in contemplating the structure of the universe and the nature of the regions lying below them, are of no avail for predictions, because they are always alike. Secondly, let there be received the approaches of each individual planet to the perpendicular, and its regressions from it, according to the climate of countries. For every planet, no less than the sun, has its summer and winter, in which as its rays fall more or less perpendicular, their force is stronger or weaker. For I have no doubt but that the moon in Leo has more power over natural bodies in our planet than when in Pisces; not because when in Leo the moon affects the heart, and when in Pisces the feet, as they talk; but by reason of her elevation towards the perpendicular and approximation to the larger stars, in the same manner as the sun [12]. Thirdly, let there be received the apogees and perigees of the planets, with a sufficient distinction as to what is due to the inherent vigour of the planet, and what to its proximity to us. For a planet is more active in its apogee or elevation, but more communicative in its perigee or descent. Fourthly, let there be received (to speak summarily) all the remaining accidents of the motions of planets; what are the accelerations and retardations of each in its course; what their progressions, actions, and regressions; what their distances from the sun, combustions, increases and diminutions of light, eclipses and the like; for all these things help to make the rays of the planets act more forcibly or more feebly, and in different modes and with different virtues. These four remarks relate to the radiations of the stars. Fifthly, let everything be received which may in any way disclose and explain the natures of the stars, whether erratic or fixed, in their proper essence and activity; as their size, their colour and aspect, their twinkling and vibration of light, their situation with reference to the poles or the exquinox, their asterisms; which of them are more mingled with other stars and which more solitary; which are higher, and which lower; which of the fixed stars are within the path of the sun and planets (that is within the zodiac), and which without; which of the planets is swifter, which slower; which of them move in the ecliptic, and which deviate to right or left of it; which of them may be retrograde, and which cannot; which of them may be at any distance from the sun, and which of them are confined to a certain limit; which of them move swifter in perigee, which in apogee; finally the anomalies of Mars, the wandering of Venus, the labours and wonderful passions which have been detected more than once both in the Sun and Venus [13]; and any other things of the like nature. Lastly let there be received also the particular natures and inclinations of the planets, and likewise of the fixed stars, as handed down by tradition; which as they are transmitted with very general consent, ought not (except when they are plainly at variance with physical reasons) to be lightly rejected. From such observations is Sane Astrology constructed, and by them alone should schemes of the heavens be formed and interpreted.

[12] The reason which Bacon rejects seems to be nearly as conclusive as that which he admits. [13] See the *Descriptio Globi Intellectualis* for some account of these passions.

Sane Astrology is applied more confidently to *predictions*, but more cautiously to *elections* ; in both cases however within due limits. *Predictions* may be made of comets to come, which (I am inclined to think) may be foretold ; of all kinds of meteors, of floods, droughts, heats, frosts, earthquakes, irruptions of water, eruptions of fire, great winds and rains, the various seasons of the year, plagues, epidemic diseases, plenty and dearth of grain, wars, seditions, schisms, transmigrations of peoples, and in short of all commotions or greater revolutions of things, natural as well as civil. But these predictions may also be made (though not so certainly) with reference to events more special and perhaps singular, if after the general inclinations of such times and seasons have been ascertained, they be applied with a clear judgment, either physical or political ,to those species or individuals which are most liable to accidents of this nature ; as for instance, if any one from a foreknowledge of the seasons of the year shall pronounce them more favourable or injurious to olives than to vines, to pulmonary than to liver complaints, to the inhabitants of hills than to those of valleys, to monks than to courtiers (by reason of their different manner of living) ; or if any one from knowledge of the influence which celestial bodies have upon human minds should discover it to be more favourable or more adverse to peoples than to kings, to learned and inquisitive men than to bold and warlike, to men of pleasure than to men of business or politicians. There are innumerable things of this kind ; but they require (as I said before) not only that general knowledge derived from the stars (which are actives), but also a particular knowledge of the subjects (which are passives). Nor are *elections* to be altogether rejected ; but less confidence is to be placed in them than in predictions. For we see that in planting and sowing and grafting, observation of the age of the moon is a thing not altogether frivolous. And there are many instances of the kind. But these elections also, even more than predictions, must be guided by our rules. And it must always be observed, that elections hold good in those cases only where both the virtue of the heavenly bodies is such as does not quickly pass, and the action of the inferior bodies is such as is not suddenly accomplished ; which is the case in those examples cited above ; for neither the changes of the moon nor the growth of plants are effected in an instant. As for those which depend upon exactness to a moment, they are to be rejected altogether. But many such cases are to be found likewise (though a man would not think it) in elections concerning civil matters. And if any one complains that while I have given some indication of the materials from which this improved astrology may be extracted, and likewise of the purpose for which it may be advantageously used, I have said nothing about the manner of extracting it, he does not deal fairly with me ; for he requires of me the art itself, for which I am not accountable. Upon the question which he asks however I will say thus much. There are four ways only by which this science can be approached. First by future experiments ; secondly by past experiments ; thirdly by traditions ; and lastly by physical reasons. With regard to future experiments, what need is there of saying anything ? seeing it requires many ages to collect a sufficient number of them ; so that it is useless to speculate about them. For past experiments, they are no doubt within man's reach ; though to collect them is a work of great labour, and one requiring much leisure. For astrologers (if they would do themselves justice) may faithfully extract from history all the greater disasters (as inundations, plagues, battles, seditions, deaths of kings, and the like), and may examine (not according to the subtleties of horoscopes, but by those rules of revolutions which I have shadowed out) what the position of the heavenly bodies was at the times ; so that where there is found a manifest agreement and coincidence of events, there a probable rule of predicted may be established. As to traditions, they must be carefully sifted, that what is plainly repugnant to physical reasons may be rejected, and what is in conformity with them may stand upon its own authority. Lastly of physical reasons, those are most adapted to this investigation which make inquiry into the universal appetites and passions of matter, and the simple and genuine motions of bodies. For upon these wings we ascend most safely to these celestial material substances. And so much for Sane Astrology.

Of astrological insanity (besides those fictions which I remarked above) there is another portion, which must not be omitted; though it ought properly to be excluded from astrology, and removed to what is called celestial magic. It rests upon a wonderful figment of the human mind,—namely, that any favourable position of the stars may be received on seals or signets (say of some metal or gem qualified for the purpose), by which the felicity of the hour, which would otherwise pass, may be arrested and as it were fixed as it flies. So the poet complains heavily that so noble an ancient art should have been lost.

> Annulus infuso non vivit mirus Olympo,
> Non magis ingentes humili sub lumine Phœbos
> Fert gemma, aut celso divulsas cardine Lunas[14].

It is true that the relics of saints and their virtues have been allowed by the Church of Rome (for in divine and immateriate things lapse of time does not matter); but to treasure up the relics of heaven, whereby the hour which is already past and as it were dead should revive and be continued, is mere superstition. Let these fancies then be dismissed, if the Muses be not turned to old women.

Abstract Physics may most rightly be divided into two parts—the doctrine concerning the Configurations of Matter, and the doctrine concerning Appetites and Motions. Both of these I will cursorily enumerate, and thence may be derived some shadow of the true Physic of Abstracts. The *Configurations of Matter* are Dense, Rare; Heavy, Light; Hot, Cold; Tangible, Pneumatic; Volatile, Fixed; Determinate, Fluid; Moist, Dry; Fat, Crude; Hard, Soft; Fragile, Tensile; Porous, Close; Spirituous, Jejune; Simple, Compound; Absolute, Imperfectly Mixed; Fibrous and Venous, Simple of Structure, or Equal; Similar, Dissimilar; Specific, Non-Specific; Organic, Inorganic; Animate, Inanimate. Further I do not go. For Sensible and Insensible, Rational and Irrational, refer to the doctrine concerning Man. Of *Appetites* and *Motions* there are two kinds. There are simple motions, in which lies the root of all natural actions, subject to the conditions of the configurations of matter. And there are Compound or Produced Motions; with which last the received philosophy (which takes but slight hold of the body of nature) commences. But compound motions of this kind (such as Generation, Corruption, and the rest) ought to be accounted as the sums or products of simple motions, rather than as primitive motions. The simple motions are, motions of *Resistance*—commonly called motion to prevent penetration of dimensions; motion of *Connexion*—which they call motion of abhorrence of a vacuum; motion of *Liberty*, to prevent preternatural compression or extension; motion into a *New Sphere*, or for the purpose of rarefaction or condensation; motion of the *Second Connexion*, or to prevent solution of continuity; motion of the *Greater Congregation*, or towards masses of connatural bodies, commonly called natural motion; motion of *Lesser Congregation*, commonly called motion of sympathy and antipathy; motion of *Disposition*, or for the ordering of the parts with reference to the whole; motion of *Assimilation*, or multiplication of its own nature upon another body; motion of *Excitation*, where the nobler agent excites a motion dormant and latent in another; motion of *Signature* or *Impression*; that is, operation without communication of substance;

[14] Not now the ring can in its circlet store
Heaven's living influence: the gem no more
Beneath its modest lustre bears the might
Of the great orbs that govern day and night.

I have not been able to discover whence these lines are taken. The notion they refer to gave rise to the word "Talisman," which seems to be a modification of the Greek word τέλεσμα, used like στοιχείωμα in the sense of a configuration of the heavenly bodies. See Salmasius *De Annis Climactericis*, and compare Von Hammer on Talismans, in the *Mines de l'Orient*. For this last reference I am indebted to the kindness of Mr. Scott, of Trinity College, Cambridge. See also Heyne, *Opuscula*, vol. 6., and the work to which he refers, namely the *Speculum Lapidum* of Camillus Leonardus, book 3rd. Some other references will be found in Le Roux de Lincy, *Livre des Légendes*.

motion of *Royalty*, or restraint of other motions by the motion predominant; motion *without limit*, or spontaneous rotation; motion of *Trepidation*, or Systole and Diastole, in bodies (that is) placed between things attractive and repugnant; lastly, motion of *Repose*, or *abhorrence of motion*, which is also causative of very many things. Such are Simple Motions; which truly proceed from the inward recesses of nature, and which by complication, continuation, alternation, restraint, repetition, and various modes of combination, form those compound motions or sums of motions which are generally received, or others like them. The sums of motion are those motions so much talked of,—generation, corruption; augmentation, diminution; alteration, and local motion; likewise mixture, separation; conversion. There remain as Appendices of Physic, the *measurements of motions*; namely, what is the effect of the *how much* or *dose* in nature; what of distance, which is not unfitly called the orb of virtue or activity[15]; what of rapidity or slowness; what of short or long delay; what of the force or dulness of the thing; what of the stimulus of surrounding things. And these are genuine parts of the true Physic of Abstracts; for in the configurations of matter in simple motions, in the sums or aggregates of motions, and in the measures of motions, the Physic of Abstracts is perfected. For voluntary motion in animals; the motion which takes place in the actions of the senses; motion of imagination, appetite, and will; motion of the mind, determination, and intellectual faculties; these I refer to their own proper doctrines. I repeat however that all these above mentioned are to be no further handled in Physic than the inquiry of their Material and Efficient causes; for as to their Formal and Final causes they are rehandled in Metaphysic.

I will subjoin two notable appendices of Physic, which regard not so much the matter as the manner of inquiry; namely *Problems of Nature* and *Dogmas of Ancient Philosophers*. The first is an appendix to nature manifold or scattered; the other, to nature united or summary. Both relate to the skilful proposing of *Doubts*; which is no despicable part of science. Problems deal with particular doubts; Dogmas with general ones, concerning first principles and the fabric of the universe. Of Problems there is a noble example in the books of Aristotle; a kind of work which certainly deserved not only to be honoured with the praises of posterity but to be continued by their labours; seeing that new doubts are daily arising. In this however there is a caution to be applied, which is of great importance. The registering and proposing of doubts has a double use; first it guards philosophy against errors, when upon a point not clearly proved no decision or assertion is made (for so error might beget error), but judgment is suspended and not made positive; secondly, doubts once registered are so many suckers or sponges which continually draw and attract increase of knowledge; whence it comes that things which, if doubts had not preceded, would have been passed by lightly without observation, are through the suggestion of doubt attentively and carefully observed. But these two advantages are scarcely sufficient to countervail one inconvenience which will intrude itself, if it be not carefully debarred; which is that a doubt if once allowed as just, and authorised as it were, immediately raises up champions on either side, by whom this same liberty of doubting is transmitted to posterity; so that men bend their wits rather to keep the doubt up than to determine and solve it. Of this examples everywhere occur both in lawyers and scholars, who when a doubt has been once admitted will have it remain for ever a doubt, and hold to authority in doubting as much as in asserting; whereas the legitimate use of reason is to make doubtful things certain and not certain things doubtful. Wherefore I say that a *calendar of doubts* or *problems in nature* is wanting, and I would wish it to be taken in hand; if only care be taken that as knowledge daily increases (which it certainly will, if men listen to me) those doubts which are clearly sifted and settled be blotted out from the list. And to this calendar I would annex another of no less utility; for seeing that in every inquiry there are found things plainly true, things doubtful, and things plainly false, it would be most advantageous to add to the calendar of doubts a calendar of *falsehoods and popular errors* prevalent

[15] The allusion is to Gilbert. See note pp. 444–5.

either in natural history or the dogmas of philosophers ; that the sciences may be no longer troubled with them.

With regard to the dogmas of the ancient philosophers, as those of Pythagoras, Philolaus, Xenophanes, Anaxagoras, Parmenides, Leucippus, Democritus, and the rest, (which men usually pass over with disdain), it will not be amiss to look upon them somewhat more modestly. For though Aristotle, after the Ottoman fashion, thought that he could not reign with safety unless he put all his brethren to death [16], yet for those who aim not at dominion or authority but at the inquiry and illustration of truth, it cannot but seem a useful thing to behold at one view the several opinions of different men touching the nature of things. Not however that there is any hope of gaining any truth of the purer kind from these or the like theories. For as the same phenomena, the same calculations, are compatible with the astronomical principles both of Ptolemy and Copernicus ; so this common experience of which we are now in possession, and the ordinary face of things, may adapt itself to many different theories ; whereas to find the real truth requires another manner of severity and attention. For as Aristotle says elegantly " that children when they begin to lisp call every woman mother, but afterwards come to distinguish their own," [17], so certainly experience when in childhood will call every philosophy mother, but when it comes to ripeness it will discern the true mother. In the meantime it will be good to peruse the several differing systems of philosophy, like different glosses upon nature ; whereof it may be that one is better in one place and another in another. Therefore I wish a work to be compiled with diligence and judgment out of the lives of the ancient philosophers, the collection of *placita* made by Plutarch, the citations of Plato, the confutations of Aristotle, and the scattered notices which we have in other books, both ecclesiastical and heathen (Lactantius, Philo, Philostratus, and the rest), concerning the *ancient philosophies*. For I do not find any such work extant. But here I must give warning that it be done distinctly, so that the several philosophies may be set forth each throughout by itself, and not by titles packed and faggoted up together, as has been done by Plutarch. For when a philosophy is entire, it supports itself, and its doctrines give light and strength the one to the other ; whereas if it be broken, it will seem more strange and dissonant. Certainly when I read in Tacitus of the actions of Nero or Claudius, invested with all the circumstances of times, persons, and occasions, I see nothing in them very improbable ; but when I read the same in Suetonius Tranquillus, gathered into titles and common places, and not presented in order of time, they seem something prodigious and quite incredible. And the case is the same in philosophy, when propounded entire and when dissected and dismembered. Neither do I exclude from this calendar of the dogmas of the old philosophers modern theories and doctrines ; such as that of Theophrastus Paracelsus, eloquently reduced into a body and harmony by Severinus the Dane ; or that of Telesius of Consentium, who revived the philosophy of Parmenides, and so turned the weapons of the Peripatetics against themselves ; or of Patricius the Venetian, who sublimated the

[16] Bacon, it is probable, alludes particularly to a memorable and then recent instance of this practice. Mahomet III., on becoming Sultan in 1595, put to death nineteen of his brothers and ten or twelve women supposed to be with child by his father. Pope, perhaps unconsciously, has imitated Bacon. In the character of Addison, he speaks of him as one who could

" Bear, like the Turk, no brother near the throne ".

It is worthy of remark that the practice in question was established as a fundamental law of the state by Mahomet the Second. I quote his words from the French edition of Von Hammer's *History of the Ottoman Empire*. " La plupart des légistes ont déclaré que ces de mes illustres fils ou petits-fils qui monteront au trône pourront faire exécuter leurs frères afin d'assurer le repos du monde—ils devront agir en conséquence."—*L'Histoire de l'Empire Ottoman*, iii. p. 392.

[16a] A little further on Von Hammer remarks that " la légalité du meurtre est consacrée non seulement pour les frères du Sultan mais encore pour ses neveux et ses petits-fils ".

[17] *Physica*. i. c. 1.

fumes of the Platonists ;[18] or of our countryman Gilbert, who revived the doctrines of Philolaus[19] ; or of any other worthy to be admitted. Of these however (since their entire works are extant) I would only have summaries made therefrom and added to the rest. And so much for Physic and its Appendices.

For Metaphysic, I have already assigned to it the inquiry of Formal and Final Causes ; which assignation, as far as it relates to Forms, may seem nugatory ; because of a received and inveterate opinion that the Essential Forms or true differences of things cannot by any human diligence be found out ; an opinion which in the meantime implies and admits that the invention of Forms is of all parts of knowledge the worthiest to be sought, if it be possible to be found. And as for the possibility of finding it, they are ill discoverers who think there is no land where they can see nothing but sea. But it is manifest that Plato, a man of sublime wit (and one that surveyed all things as from a lofty cliff)[20], did in his doctrine concerning Ideals descry that Forms were the true object of knowledge ; howsoever he lost the fruit of this most true opinion by considering and trying to apprehend Forms as absolutely abstracted from matter ; whence it came that he turned aside to theological speculations, wherewith all his natural philosophy is infected and polluted. But if we fix our eyes diligently, seriously and sincerely upon action and use, it will not be difficult to discern and understand what those Forms are the knowledge whereof may wonderfully enrich and benefit the condition of men. For as to the Forms of Substances (Man only excepted, of whom the Scripture saith, " That He made man of the dust of the earth and breathed into his nostrils the breath of life "[21], and not as of all other creatures, " Let the earth or the waters bring forth "[22])—the Forms of Substances I say (as they are now by compounding and transplanting multiplied) are so perplexed and complicated, that it is either vain to inquire into them at all, or such inquiry as is possible should be put off for a time, and not entered upon until forms of a more simple nature have been rightly investigated and discovered. For as it would be neither easy nor of any use to inquire the form of the sound which makes any word, since words, by composition and transposition of letters, are infinite ; whereas to inquire the form of the sound which makes any simple letter (that is, by what collision or application of the instruments of voice it is produced) is comprehensible, nay easy ; and yet these forms of letters once known will lead us directly to the forms of words ; so in like manner to inquire the form of a lion, of an oak, of gold, nay even of water or air, is a vain pursuit ; but to inquire the form of dense, rare, hot, cold, heavy, light, tangible, pneumatic, volatile, fixed, and the like, as well configurations as motions, which in treating of Physic I have in great part enumerated (I call them *Forms of the First Class,*) and which (like the letters of the alphabet) are not many and yet make up and sustain the essences and forms of all substances[23] ;—this, I say, it is which I am attempting, and

[18] Severinus was a Danish physician. He died in the year 1602, leaving several works on medical and philosophical subjects, in which he followed the opinions of Paracelsus. I am only acquainted with his *Idea Medicinæ Philosophicæ*, which there is reason to think Bacon had read. His writings are in point of style much superior to those of Paracelsus, who was however unquestionably a man of far more original genius.

Telesius's principal work is his *De Rerum Naturâ* [the first two books of which were published in 1565, and the whole in 1586]. Bacon derived more ideas from him than from any other of the " novelists," as he has somewhere called the philosophical innovators, and has written a separate treatise (the *Descriptio Globi Intellectualis*) on three systems of philosophy, of which his is one.

Patricius attempted to amalgamate the Platonic and Aristotelian philosophies. His principal work, entitled *Nova de Universis Philosophia*, was published in 1591.

[19] As to the movement of the earth. See Diogenes Laërtius.

[20] The reference is probably to the passage in the *Philebus* (p. 17 *et infra*) in which Plato speaks of the analysis of sounds into their constituent elements.

[21] Gen. ii. 7. [22] Gen. i. 20. 24.

[23] It clearly appears from this passage that Bacon's doctrine was that the forms of all substances might be determined by combining the results of a limited number of investigations of the forms of schematisms and motions, or as he elsewhere calls them, of

which constitutes and defines that part of Metaphysic of which we are now inquiring. Not but that Physic takes consideration of the same natures likewise (as has been said); but that is only as to their variable causes. For example; if the cause of whiteness in snow or froth be inquired, it is well rendered, that it is the subtle intermixture of air and water. But nevertheless this is far from being the form of whiteness, seeing that air intermixed with powdered glass or crystal would create a similar whiteness, no less than when mixed with water; it is only the efficient cause, which is nothing else than the vehicle of the form. But if the inquiry be made in Metaphysic you will find something of this sort; that two transparent bodies intermixed, with their optical portions arranged in a simple and regular order, constitute whiteness. This part of Metaphysic I find deficient; whereat I marvel not, because I hold it not possible that the Forms of things can be invented by that course of invention hitherto used; the root of the evil, of as all others, being this; that men have used to sever and withdraw their thoughts too soon and too far from experience and particulars, and have given themselves wholly up to their own meditations and arguments.

But the use of this part of Metaphysic, which I reckon amongst the 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 circuits and long ways of experience (as much as truth will permit), and to remedy the ancient complaint that "life is short and art is long"[24]. And this is best performed by collecting and uniting the axioms of sciences into more general ones, and such as may comprehend all individual cases. For knowledges are as pyramids, whereof history and experience are the basis. And so of Natural Philosophy the basis is Natural History; the stage next the basis is Physic; the stage next the vertical point is Metaphysic. As for the cone and vertical point ("the work which God worketh from the beginning to the end"[25], namely, the summary law of nature) it may fairly be doubted whether man's inquiry can attain to it. But these three are the true stages of knowledge; which to those that are puffed up with their own knowledge, and rebellious against God, are indeed no better than the giants' three hills;

> Ter sunt conati imponere Pelio Ossam,
> Scilicet atque Ossæ frondosum involvere Olympum[26]:

but to those who abasing themselves refer all things to the glory of God, they are as the three acclamations: Holy, Holy, Holy. For God is holy in the multitude of his works, holy in the order or connexion of them, and holy in the union of them. And therefore the speculation was excellent in Parmenides and Plato (although in them it was but a bare speculation), "that all things by a certain scale ascend to unity"[27]. So then always that knowledge is worthiest which

simple natures. (See *Novum Organum*, ii. 5.) For the phrase "Formæ primæ classis;" see infra p. 471. The difficulty of effecting this combination might be insuperable; he did not profess to be able to decide à priori that it was not so; but at any rate it would be only a synthetical difficulty and would not present itself until his analysis of nature was completed and the forms of her constituent elements determined. Of the possibility of attaining these two ends—namely (1) an analysis of nature resulting in the formation of a complete list of "naturæ simplices," and (2) the determination of their forms—he seems never to have doubted.

[24] Hippocrates, *Aph.* i. 1. [25] Eccles. iii. 11.

[26] Virg. *Georg.* i. 281.:—Mountain on mountain thrice they strove to heap.
Olympus, Ossa, piled on Pelion's steep.

[27] No such doctrine as this is to be found in the remains which have come down to us of the writings of Parmenides, and it is in effect inconsistent with what we know of his opinions. His fundamental dictum appears to have been that that which is, is one; incapable of change or motion. That visible things are in any sense parts or elements or attributes of the one immutable substance is, as far as we can judge, a later doctrine. To the question, what then are the phenomena of the visible universe, Parmenides gives no answer; unless we account as an answer what he says of their delusive and non-existent character. Even Plato was far from teaching the doctrine of an ascent to unity in the sense in which Bacon probably employed the terms. He no doubt adopted in

least burdens the intellect with multiplicity ; and this appears to be Metaphysic, as that which considers chiefly the simple forms of things (which I have above termed *forms of the first class*) ; since although few in number, yet in their commensurations and co-ordinations they make all this variety. The second respect which ennobles this part of Metaphysic, is that it enfranchises the power of men to the greatest liberty, and leads it to the widest and most extensive field of operation. For Physic carries men in narrow and restrained ways, imitating the ordinary flexuous courses of Nature ; but the ways of the wise are everywhere broad ; to wisdom (which was anciently defined to be the knowledge of things divine and human [28]) there is ever abundance and variety of means. For physical causes give light and direction to new inventions in similar matter. But whosoever knows any Form, knows also the utmost possibility of superinducing that nature upon every variety of matter, and so is less restrained and tied in operation, either to the basis of the matter or to the condition of the efficient ; which kind of knowledge Solomon likewise, though in a more divine sense, elegantly describes, " Thy steps shall not be straitened, and when thou runnest thou shalt not stumble " [29] ; meaning thereby that the ways of wisdom are not much liable either to straitness or obstructions.

The second part of Metaphysic is the inquiry of Final Causes, which I report not as omitted, but as misplaced. For they are generally sought for in Physic, and not in Metaphysic. And yet if it were but a fault in order I should not think so much of it ; for order is matter of illustration, but pertains not to the substance of sciences. But this misplacing has caused a notable deficience, and been a great misfortune to philosophy. For the handling of final causes in physics has driven away and overthrown the diligent inquiry of physical causes, and made men to stay upon these specious and shadowy causes, without actively pressing the inquiry of those which are really and truly physical ; to the great arrest and prejudice of science. For this I find done, not only by Plato, who ever anchors upon that shore, but also by Aristotle, Galen [30], and others, who also very frequently strike upon these shallows. For to introduce such causes as these, " 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 and cold " ; or " that the bones are for columns or beams, whereupon the frames of the bodies of living creatures are built " ; or " that the leaves of trees are for protecting the fruit from the sun and wind " ; or " that the clouds are formed above for watering the earth " ; or " that the thickness and solidity of the earth is for the station and mansion of living creatures ", and the like, is a proper inquiry in Metaphysic, but in Physic it is impertinent. Nay, as I was going to say, these discoursing causes (like those fishes they call *remoras*, which are said to stick to the sides of ships) have in fact hindered the voyage and progress of the sciences, and prevented them from holding on their course and advancing further ; and have brought it to pass that the inquiry of physical causes has been long neglected and passed in silence. And therefore the natural philosophy of Democritus and others, who removed God and Mind from the structure of things, and attributed the form thereof to infinite essays and proofs

his own sense the dictum of the Eleatæ, ἓν τὰ πάντα ; but with him as with them mere phenomena have no true existence. In later writers, however, Bacon may easily have found expressions derived from the authority of Plato and Parmenides, and more consonant with his own views of the nature of the universe. But so far as they themselves were concerned, it may I think be safely stated that though the latter affirmed the ἑνότης of that which exists, no doctrine of ἕνωσις entered into his teaching ; and that that which presents itself in the system of the former was essentially different from Bacon's ascent to unity.

[28] See Cicero, *Tusc. Quæst.* iv. 26. [29] Prov. iv. 12.

[30] See especially Galen's *De usu Partium*, which is in effect a treatise on the doctrine of final causes as exemplified in animal physiology. He calls the last book, which introduces the general considerations to which the subject leads, the Epode of the whole work ; explaining that he does so, because the Epode is sung while the chorus stands at the altar of the deity.

of nature [31] (which they termed by one name, Fate or Fortune), and assigned the causes of particular things to the necessity of matter, without any intermixture of final causes, seems to me (so far as I can judge from the fragments and relics of their philosophy) to have been, as regards physical causes, much more solid and to have penetrated further into nature than that of Aristotle and Plato; for this single reason, that the former never wasted time on final causes, while the latter were ever inculcating them. And in this Aristotle is more to be blamed than Plato, seeing that he left out the fountain of final causes, namely God, and substituted Nature for God; and took in final causes themselves rather as the lover of logic than of theology. And I say this, not because those final causes are not true and worthy to be inquired in metaphysical speculations; but because their excursions and irruptions into the limits of physical causes has bred a waste and solitude in that track. For otherwise, if they be but kept within their proper bounds, men are extremely deceived if they think there is any enmity or repugnancy at all between the two. For the cause rendered, "that the hairs about the eyelids are for the safeguard of the sight," does not impugn the cause rendered, "that pilosity is incident to orifices of moisture":

Muscosi fontes, etc.[32]

Nor the cause rendered, "that the firmness of hides in animals is for the armour of the body against extremities of heat or cold," does not impugn the cause rendered, "that this firmness is caused from the contraction of the pores in the outward parts by cold and depredation of the air;" and so of the rest; both causes being perfectly compatible, except that one declares an intention, the other a consequence only. Neither does this call in question or derogate from divine providence, but rather highly confirms and exalts it. For as in civil actions he is far the greater and deeper politician that can make other men the instruments of his ends and desires and yet never acquaint them with his purpose (so as they shall do what he wills and yet not know that they are doing it), than he that imparts his meaning to those he employs; so does the wisdom of God shine forth more admirably when nature intends one thing and Providence draws forth another, than if he had communicated to all natural figures and motions the characters and impressions of his providence. For instance, Aristotle, when he had made nature pregnant with final causes, laying it down that "Nature does nothing in vain [33], and always effects her will when free from impediments" and many other things of the same kind, had no further need of a God. But Democritus and Epicurus, when they proclaimed their doctrine of atoms, were tolerated so far by some of the more subtle wits; but when they proceeded to assert that the fabric of the universe itself had come together through the fortuitous concourse of the atoms, without a mind, they were met with universal ridicule. Thus so far are physical causes from withdrawing men from God and Providence, that contrariwise, those philosophers who have been occupied in searching them out can find no issue but by resorting to God and Providence at the last [34]. And so much for Metaphysic; the latter part whereof, concerning Final Causes, I allow to be extant in books both physical and metaphysical; in the latter rightly, in the former wrongly, by reason of the inconvenience that ensues thereon.

[31] See in illustration of this phrase, Lucretius, v. 835. et seq.

[32] Virg. *Eclog.* vii. 45. :—The mossy springs.

[33] Aristotle, *Polit.* i. 2, and many other passages.

[34] "C'est Dieu," affirms Leibnitz in a spirit not unlike that of the text, "qui est la dernière raison des choses; et la connoissance de Dieu n'est pas moins le principe des sciences que son essence et sa volonté sont les principes des êtres". And a little further on he remarks that "les principes généraux de la Physique et de la Mécanique même dépendent de la conduite d'une intelligence souveraine, et ne sauraient être expliqués sans le faire entrer en considération. C'est ainsi qu'il faut réconcilier la piété avec la raison, et qu'on pourra satisfaire aux gens de bien qui apprehendent les suites de la philosophie mécanique ou corpusculaire, comme si elle pouvait éloigner de Dieu, et des substances immatérielles, au lieu qu'avec les corrections requises, et tout bien entendu, elle doit nous y mener."—*Lettre à Bayle*, p. 106 of Erdmann's edition.

CHAPTER V.

Division of the operative doctrine concerning Nature into Mechanic *and* Magic, *which correspond with the divisions of the speculative doctrine*, Mechanic *answering to* Physic, Magic *to* Metaphysic. *Purification of the word Magic. Two appendices of the operative doctrine.* Inventory of the possessions of man, *and* Catalogue of Polychrests, *or things of general use.*

The operative doctrine concerning nature I will likewise divide into two parts, and that by a kind of necessity, for this division is subject to the former division of the speculative doctrine; and as Physic and the inquisition of Efficient and Material causes produces Mechanic, so Metaphysic and the inquisition of Forms produces Magic. For the inquisition of Final Causes is barren, and like a virgin consecrated to God produces nothing[1]. I know that there is also a kind of Mechanic often merely empirical and operative, which does not depend on physic; but this I have remitted to Natural History, taking it away from Natural Philosophy. I speak only of that mechanic which is connected with physical causes. Nevertheless between these two kinds of mechanic there is also another which is not altogether operative, yet does not properly reach to philosophy. For all inventions of works which are known to men have either come by chance and so been handed down from one to another, or they have been purposely sought for. But those which have been found by intentional experiment have been either worked out by the light of causes and axioms, or detected by extending or transferring or putting together former inventions; which is a matter of ingenuity and sagacity rather than philosophy. And this kind, which I noways despise, I will presently touch on by the way, when I come to treat of *learned experience* among the parts of logic. But the mechanic of which I now treat is that which has been handled by Aristotle promiscuously, by Hero in spirituals, by Georgius Agricola, a modern writer, very diligently in minerals, and by many other writers in particular subjects[2]; so that I have no omissions to mark in this part, except that promiscuous mechanics, after the manner of Aristotle, ought to have been more diligently continued by the moderns, especially with selection of those

[1] No saying of Bacon's has been more often quoted and misunderstood than this. Carrying out his division of the *Doctrina de Naturâ*, which as we have seen depends upon Aristotle's quadripartite classification of causes, he remarks that to Physica corresponds Mechanica, and to Metaphysica, Magia. But Metaphysica contains two parts, the doctrine of forms and the doctrine of final causes. Bacon remarks that Magia corresponds to Metaphysica, inasmuch as the latter contains the doctrine of forms, that of final causes admitting from its nature of no practical applications. "Nihil parit," means simply "non parit opera", which though it would have been a more precise mode of expression would have destroyed the appositeness of the illustration. No one who fairly considers the context can, I think, have any doubts as to the limitation with which the sentence in question is to be taken. But it is often the misfortune of a pointed saying to be quoted apart from any context, and consequently to be misunderstood.

[2] The *Mechanical Problems* of Aristotle are here referred to. Of Hero, an Alexandrian physicist, who flourished about B.C. [100], Fludd makes frequent mention, and it is perhaps on this account that he is here introduced. It is remarkable that no notice is taken of Archimedes who, beyond all comparison, was the greatest mechanical philosopher of antiquity. With his writings however there is reason to think that Bacon had no acquaintance, and in the *Historia Densi et Rari* his most popularly known invention, that of the method of detecting the adulteration of Hiero's crown, is mentioned in a manner which seems to show that Bacon did not distinctly apprehend the principle on which it depends. With contemporary scientific writers, Bacon seldom appears to be acquainted, and it is therefore less remarkable that no mention is made of Stevinus, Galileo, Guldinus or Ghetaldus. Galileo's astronomical discoveries were of course more generally known than his mechanical researches.

The writings of Agricola, who has been called the German Pliny, are even now, it is said, of considerable value, and certainly entitle him to a high place among the scientific men of the sixteenth century. His greatest work is the *De re metallica*, in twelve books [published at Basle in 1555].

whereof either the causes are more obscure, or the effects more noble. But they who pursue these studies do but creep as it were along the shore,

premendo litus iniquum [3].

For it seems to me there can hardly be discovered any radical or fundamental alterations and innovations of nature, either by accidents or essays of experiments, or from the light and direction of physical causes; but only by the discovery of forms. If then I have set down that part of metaphysic which treats of forms as deficient, it must follow that I do the like of natural magic, which has relation thereunto. But I must here stipulate that magic, which has long been used in a bad sense, be again restored to its ancient and honourable meaning. For among the Persians magic was taken for a sublime wisdom, and the knowledge of the universal consents of things; and so the three kings who came from the east to worship Christ were called by the name of Magi. I however understand it as the science which applies the knowledge of hidden forms to the production of wonderful operations; and by uniting (as they say) actives with passives, displays the wonderful works of nature [4]. For as for that natural magic which flutters about so many books [5], embracing certain credulous and superstitious traditions and observations concerning sympathies and antipathies, and hidden and specific properties, with experiments for the most part frivolous, and wonderful rather for the skill with which the thing is concealed and masked than for the thing itself; it will not be wrong to say that 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, and such like imaginary heroes, differs from Cæsar's Commentaries in truth of story. For it is manifest that Cæsar did greater things in reality than those imaginary heroes were feigned to do, but he did them not in that fabulous manner. Of this kind of learning the fable of Ixion was a figure; who designing to embrace Juno, the Goddess of Power, had intercourse with a fleeting cloud; out of which he begot Centaurs and Chimæras. So they who are carried away by insane and uncontrollable passion after things which they only fancy they see through the clouds and vapours of imagination, shall in place of works beget nothing else but empty hopes and hideous and monstrous spectres. But this popular and degenerate natural magic has the same kind of effect on men as some soporific drugs, which not only lull to sleep, but also during sleep instil gentle and pleasing dreams. For first it lays the understanding asleep by singing of specific properties and hidden virtues, sent as from heaven and only to be learned from the whispers of tradition; which makes men no longer alive and awake for the pursuit and inquiry of real causes, but to rest content with these slothful and credulous opinions; and then it insinuates innumerable fictions, pleasant to the mind, and such as one would most desire,—like so many dreams. And it is worth while to note that in these sciences which hold too much of imagination and belief (such as that light Magic of which I now speak, Alchemy, Astrology, and others the like) the means and theory are ever more monstrous than the end and action at which they aim. The conversion of silver, quicksilver, or any other metal into gold, is a thing difficult to believe; yet it is far more probable that a man who knows clearly the natures of weight, of the colour of yellow, of malleability and extension, of volatility and fixedness, and who has also made diligent search into the first seeds and menstruums of minerals, may at last by much and sagacious endeavour produce gold; than that a few grains of an elixir should in a few moments of time be able to turn other metals into gold by the agency of that elixir, as having power to perfect nature and free it from all impediments. So again the retarding of old age or the restoration of some degree of youth, are things hardly credible; yet it is far more

[3] Hor. Od. ii. 10:—"hugging the coast."

[4] Orig. *Magnalia naturæ*—a favourite phrase with Paracelsus. The word magnalia occurs in the Vulgate; see Ps. cvi. 22., where our version is "wondrous works".

[5] See for instance the *Natural Magic* of G. B. Porta, published in [1589]; which quite deserves the character here given of the class to which it belongs.

probable that a man who knows well the nature of arefaction and the depredations of the spirits upon the solid parts of the body, and clearly understands the nature of assimilation and of alimentation, whether more or less perfect, and has likewise observed the nature of the spirits, and the flame as it were of the body, whose office is sometimes to consume and sometimes to restore, shall by diets, bathings, anointings, proper medicines, suitable exercises, and the like, prolong life, or in some degree renew the vigour of youth; than that it can be done by a few drops or scruples of a precious liquor or essence. Again, that fates can be drawn from the stars is more than men will at once or lightly admit; but that the hour of nativity (which is very often either delayed or hastened by many natural accidents) should influence the fortune of a whole life; or that the hour of question has a fatal connexion with the subject of inquiry; these you may call mere follies. But such is the immoderation and intemperance of men that they not only promise to themselves things impossible, but expect to obtain the most difficult things without trouble or toil, as in a holiday recreation. And so much for Magic; whereof I have both vindicated the name itself from discredit, and separated the true kind from the false and ignoble.

But to this operative department of natural philosophy there belong two appendices, both of great value. The first is that there be made an Inventory of the Possessions of Man, wherein should be set down and briefly enumerated all the goods and possessions (whether derived from the fruits and proceeds of nature or of art) which men now hold and enjoy; with the addition of things once known but now lost; in order that those who address themselves to the discovery of new inventions may not waste their pains upon things already discovered and extant. Which calendar will be more workmanlike and more serviceable too, if you add to it a list of those things which are in common opinion reputed impossible in every kind, noting, in connexion with each, what thing is extant which comes nearest in degree to that impossibility; that by the one human invention may be stimulated, and by the other it may to a certain extent be directed; and that by these optatives and potentials active discoveries may the more readily be deduced. The second is, that there be also made a calendar of those experiments which are of most general use, and lead the way to the invention of others. For example, the experiment of the artificial freezing of water by the mixture of ice and bay salt[6] bears on an infinite number of things; for it reveals a secret method of condensation, than which nothing is more serviceable to man. For rarefactions we have fire at hand, but for the means of condensation we are in difficulty. Now it would greatly tend to abridge the work of invention if *Polychrests* of this kind were set down in a proper catalogue.

CHAPTER VI.

Of the great Appendix of Natural Philosophy, both Speculative and Operative, namely Mathematic; *and that it ought rather to be placed among Appendices than among Substantive Sciences. Division of Mathematic into* Pure *and* Mixed.

Aristotle has well remarked that Physic and Mathematic produce Practice or Mechanic[1]; wherefore as we have already treated of the speculative and operative part of natural philosophy, it remains to speak of Mathematic, which is a science auxiliary to both. Now this in the common philosophy is annexed as a third part to Physic and Metaphysic; but for my part, being now engaged in

[6] The artificial congelation of water by snow and salt Bacon has elsewhere spoken of as a recent discovery. I have not been able to ascertain by whom it was made. In Boyle's *New Experiments of Cold*, it is said to be familiarly made use of in Italy, though scarcely known in England; and in the collection of experiments published by the Florentine Academicians in 1667 (in which collection the celebrated "Florentine experiment", which is in reality due to Bacon, is contained), artificial congelations are spoken of, but (probably because the subject was commonly known) without any reference to the history of the invention. "Sal nigrum," it may be well to mention, is Saltpetre.

[1] Arist. Praef. ad Quæst. Mechan.

reviewing and rehandling these things, if I meant to set it down as a substantive and principal science, I should think it more agreeable both to the nature of the thing and the clearness of order to place it as a branch of Metaphysic. For Quantity (which is the subject of Mathematic), when applied to matter, is as it were the dose of Nature, and is the cause of a number of effects in things natural; and therefore it must be reckoned as one of the Essential Forms of things. And so highly did the ancients esteem the power of figures and numbers, that Democritus ascribed to the figures of atoms the first principles of the variety of things; and Pythagoras asserted that the nature of things consisted of numbers. In the meantime it is true that of all natural forms (such as I understand them) Quantity is the most abstracted and separable from matter; which has likewise been the cause why it has been more carefully laboured and more acutely inquired into than any of the other forms, which are all more immersed in matter. For it being plainly the nature of the human mind, certainly to the extreme prejudice of knowledge, to delight in the open plains (as it were) of generalities rather than in the woods and inclosures of particulars, the mathematics of all other knowledge were the goodliest fields to satisfy that appetite for expatiation and meditation. But though this be true, regarding as I do not only truth and order but also the advantage and convenience of mankind, I have thought it better to designate Mathematics, seeing that they are of so much importance both in Physics and Metaphysics and Mechanics and Magic, as appendices and auxiliaries to them all. Which indeed I am in a manner compelled to do, by reason of the daintiness and pride of mathematicians, who will needs have this science almost domineer over Physic. For it has come to pass, I know not how, that Mathematic and Logic, which ought to be but the handmaids of Physic, nevertheless presume on the strength of the certainty which they possess to exercise dominion over it. But the place and dignity of this science is of less importance: let us now look to the thing itself.

Mathematic is either Pure or Mixed. To Pure Mathematic belong those sciences which handle Quantity entirely severed from matter and from axioms of natural philosophy. These are two, Geometry and Arithmetic; the one handling quantity continued, and the other dissevered. These two arts have been inquired into and handled with great wit and industry; and yet to the labours of Euclid in geometry no addition has been made by his successors worthy of so long an interval; nor has the doctrine of solids been sufficiently examined and advanced either by ancients or moderns, in proportion to the use and excellency of the subject [2]. And in arithmetic, neither have there been discovered formulas for the abridgment of computation sufficiently various and convenient, especially with regard to progressions, of which there is no slight use in Physics [3], nor has algebra been well perfected; and the mystic arithmetic of Pythagoras,

[2] We might here expect to find some mention of Archimedes and of Apollonius, whose labours contributed more to the progress of geometry than those of Euclid, who was rather a systematiser than an original discoverer, and whose Elements do not embrace the whole extent of the geometry of the Greeks. The doctrine of conic sections, which was commenced by Plato, and the method of limits of Archimedes, both most important portions of the Greek geometry, are of course not to be found in Euclid's Elements, not to mention a variety of isolated investigations. It is undoubtedly true that even long after Bacon's time geometry advanced more slowly beyond the limits it had attained in antiquity than other parts of mathematics, though in the present day it may be said to have become a new science. See on this head, the *Aperçu Historique des Méthodes de la Géométrie* of M. Chasles, himself one of those who have contributed the most to its recent progress.

[3] One would certainly not infer from this remark, to which there is nothing corresponding in the *Advancement of Learning* that Bacon was aware that in the interval which had elapsed since its publication, the greatest of all inventions for facilitating arithmetical computations had been made known. Napier's *Logarithms* were published in 1614, and reprinted on the continent in 1620; in which year Gunter's *Canon of Triangles* was also published. In 1618 Robert Napier's account of his father's method and Briggs's first table of Logarithms were both published. In the year succeeding that of

which has been revived of late from Proclus and fragments of Euclid, is a kind of wandering speculation : for it is incidental to the human mind, that when it cannot master the solid, it wastes itself on the superfluous. Mixed Mathematic has for its subject some axioms and parts of natural philosophy, and considers quantity in so far as it assists to explain, demonstrate, and actuate these. For many parts of nature can neither be invented with sufficient subtlety, nor demonstrated with sufficient perspicuity, nor accommodated to use with sufficient dexterity, without the aid and intervention of Mathematic : of which sort are Perspective, Music, Astronomy, Cosmography, Architecture, Machinery [4], and some others. In mixed Mathematics I do not find any entire parts now deficient, but I predict that hereafter there will be more kinds of them, if men be not idle. For as Physic advances farther and farther every day and develops new axioms, it will require fresh assistance from Mathematic in many things, and so the parts of Mixed Mathematics will be more numerous.

And now I have passed through the doctrine concerning Nature, and marked the deficiencies thereof. Wherein if I have differed from the ancient and received doctrines, and thereby given a handle to contradiction ; for my part, as I am far from wishing to dissent, so I purpose not to contend. If it be truth,

Non canimus surdis, respondent omnia silvae [5] :

the voice of nature will consent, whether the voice of man do or not. But as Alexander Borgia was wont to say of the expedition of the French to Naples, "that they came with chalk in their hands to mark up their lodgings, and not with weapons to break in" ; so I like better that entry of truth, which comes peaceably as with chalk to mark up those minds which are capable to lodge and harbour such a guest, than that which forces its way with pugnacity and contention. Having therefore gone through the two parts of philosophy respecting God and Nature, there remains the third, respecting Man.

the publication of the *De Augmentis* his larger tables, and probably those of Wingate made their appearance.

These dates are sufficient to show how much the attention of mathematicians was given to the subject. It would almost seem as if some one, possibly Savile, had told Bacon—what was no doubt true—that the application of the doctrine of series to arithmetical computation was not as yet brought to perfection, and that he had adopted the remark without understanding the importance of the discovery to which it referred, and perhaps without being aware that any such discovery had been made.

[4] Machinaria means the art of making machines, not mechanics in the common sense of the word. It therefore appears from this enumeration that Bacon was not acquainted with any application of mathematics to statics or dynamics, as he would certainly not have included these fundamental portions of mixed mathematics in the nonnullæ aliæ with which the list concludes. The omission of any reference to the mathematical doctrine of motion is not surprising, though Galileo's researches were known for many years before the publication of the *De Augmentis* , the theory of equilibrium, however, is as old as the time of Archimedes ; and we might therefore have expected that it would have been here mentioned.

[5] Virg. *Eclog.* x. 8. :—

To no deaf ears we sing, the echoing woods reply.

Book IV

CHAPTER I.

Division of the doctrine concerning Man into Philosophy of Humanity *and* Philosophy Civil. *Division of the Philosophy of Humanity into doctrine concerning the* Body of Man *and doctrine concerning the* Soul of Man. *Constitution of one general doctrine concerning the* Nature *or the* State of Man. *Division of the doctrine concerning the State of Man into doctrine concerning the* Person of Man, *and doctrine concerning the* League of Mind and Body. *Division of the doctrine concerning the Person of Man into doctrine concerning the* Miseries of Man, *and doctrine concerning his* Prerogatives. *Division of the doctrine concerning the League into doctrine concerning* Indications *and concerning* Impressions. *Assignation of* Physiognomy *and* Interpretation of Natural Dreams *to the doctrine concerning Indications.*

If any one should aim a blow at me (excellent King) for anything I have said or shall hereafter say in this matter, (besides that I am within the protection of your Majesty,) let me tell him that he is acting contrary to the rules and practice of warfare. For I am but a trumpeter, not a combatant ; one perhaps of those of whom Homer speaks,

Χαίρετε κήρυκες, Διὸς ἄγγελοι, ἠδὲ καὶ ἀνδρῶν [1] :

and such men might go to and fro everywhere unhurt, between the fiercest and bitterest enemies. Nor is mine a trumpet which summons and excites men to cut each other to pieces with mutual contradictions, or to quarrel and fight with one another ; but rather to make peace between themselves, and turning with united forces against the Nature of Things, to storm and occupy her castles and strongholds, and extend the bounds of human empire, as far as God Almighty in his goodness may permit.

Let us now come to that knowledge whereunto the ancient oracle directs us, which is the knowledge of ourselves ; which deserves the more accurate handling in proportion as it touches us more nearly. This knowledge is for man the end and term of knowledges ; but of nature herself it is but a portion. And generally let this be a rule ; that all divisions of knowledges be accepted and used rather for lines to mark or distinguish, than sections to divide and separate them ; in order that solution of continuity in sciences may always be avoided. For the contrary hereof has made particular sciences to become barren, shallow, and erroneous ; not being nourished and maintained and kept right by the common fountain and aliment. So we see Cicero the orator complaining of Socrates and his school, that he was the first who separated philosophy and rhetoric ; whereupon rhetoric became an empty and verbal art [2]. So we may see that the opinion of Copernicus touching the rotation of the earth (which has now become prevalent) cannot be refuted by astronomical principles, because it is not repugnant to any of the phenomena ; yet the principles of natural philosophy rightly laid down may correct it. Lastly we see that the science of medicine, if it be forsaken by natural philosophy, is not much better than an empirical practice. With this reservation therefore let us proceed to the doctrine concerning Man. It has two parts. For it considers man either segregate, or congregate and in society. The one I call the Philosophy of Humanity, the other Civil Philosophy. Philosophy of Humanity consists of parts similar to those of which man consists ; that is, of know-

[1] Hom. *Il.* i. 334. :—Hail, heralds, messengers of Jove and men !
[2] Cicero *De Orat.* iii. c. 19.

ledges which respect the body, and of knowledges which respect the mind. But before we pursue the particular distributions let us constitute one general science concerning the Nature and State of Man ; a subject which certainly deserves to be emancipated and made a knowledge of itself. It is composed of those things which are common as well to the body as the soul ; and may be divided into two parts ; the one regarding the nature of man undivided, and the other regarding the bond and connexion between the mind and body ; the first whereof I will term the doctrine concerning the Person of Man, the second the doctrine concerning the League. But it is plain that these things, being common and mixed, could not all have been assigned to that first division, of sciences which regard the body and sciences which regard the mind.

The doctrine concerning the Person of Man takes into consideration two subjects principally ; the Miseries of the human race, and the Prerogatives or Excellencies of the same. And for the miseries of humanity, the lamentation of them has been elegantly and copiously set forth by many, both in philosophical and theological writings. And it is an argument at once sweet and wholesome.

But that other subject of the Prerogatives of Man seems to me to deserve a place among the *desiderata*. Pindar in praising Hiero says most elegantly (as is his wont) that he "culled the tops of all virtues" [3]. And certainly I think it would contribute much to magnanimity and the honour of humanity, if a collection were made of what the schoolmen call the *ultimities*, and Pindar the *tops or summits*, of human nature, especially from true history ; showing what is the ultimate and highest point which human nature has of itself attained in the several gifts of body and mind. What a wonderful thing, for example, is that which is told of Cæsar,—that he could dictate to five secretaries at once. And again those exercitations of the ancient rhetoricians, Protagoras and Gorgias, and of the philosophers, Callisthenes, Posidonius, Carneades,—who could speak elegantly and copiously, extempore, on either side of any subject,—is no small honour to the powers of the human wit. A thing inferior in use, but as a matter of display and ability perhaps still greater, is that which Cicero [4] relates of his master Archias—that he could speak extempore a great number of excellent verses about anything that happened to be going on at the time [5]. That Cyrus or Scipio could call so many thousands of men by name was a great feat of memory [6]. Nor are the triumphs of the moral virtues less famous than those of the intellectual. What a proof of patience is displayed in the story told of Anaxarchus, who, when questioned under torture, bit out his own tongue (the only hope of information), and spat it into the face of the tyrant [7]. Nor was it a less thing in point of endurance (however inferior in worthiness) which occurred in our own times in the case of the Burgundian who murdered the Prince of Orange [8] : being beaten with rods of iron and torn with red-hot pincers, he uttered not a single groan ; nay, when something aloft broke and fell on the head of a bystander, the half-burnt wretch laughed in the midst of his torments, though but a little before he had wept at the cutting off of his curling locks. A wonderful composure and serenity of mind at the point of death has also been displayed by many ; as in the case of the centurion related by Tacitus : when bidden by the soldier appointed to execute him to stretch out his neck boldly, "I wish," he replied, "that you may

[3] Pind. Olymp. i. 20. [4] Cicero, pro Archiâ, c. 8. [5] Cf. Laert. ix. 59.

[6] Xenophon says that Cyrus knew the names of all the officers (ἡγεμόνες) in his army ; later writers go much farther, and affirm that he knew the names of all his soldiers. Compare Valerius Max. viii. 7. with Xenophon's statement, *Cyrop.* v. 3. The same exaggeration occurs in Solinus, c. 5. : "Cyrus memoriæ bono claruit, qui in exercitu cui numerosissimo præfuit nominatim singulos alloqueretur". The Scipio here mentioned is Lucius Scipio Asiaticus. Vide Solin. ubi sup. or Pliny, vii. 34.

[7] The story is somewhat differently told by Diogen. Laert. ix. 59 ; but in Pliny and Valerius Maximus we find it related as in the text. A similar story is told of Leæna in Ælian's *Hist. Var.*

[8] The person referred to is Balthazar Gerard of Franche Comté, who shot William IX., Prince of Orange, at Delft, in 1584. Vide *Histoire Générale des Pays Bas*, v. 384.

strike as boldly [9]." John Duke of Saxony, when the warrant was brought to him for his execution next day, was playing at chess. Calling a bystander to him, he said with a smile, "See whether I have not the best of the game; for when I am dead he (pointing to his adversary) will boast that he was winning" [10]. Our own More, too, Chancellor of England, when the day before he was to die a barber came to him (sent because his hair was long, which it was feared might make him more commiserated with the people) and asked him "whether he would be pleased to be trimmed," refused; and turning to the barber, "The King and I (said he) have a suit for my head, and till the title be cleared I will do no cost upon it". The same More, at the very instant of death, when he had already laid his head on the fatal block, lifted it up a little, and gently drew aside his beard, which was somewhat long, saying, "this at least hath not offended the King." But not to stay too long on the point, my meaning is sufficiently clear; namely, that the miracles of human nature, and its highest powers and virtues both in mind and body, should be collected into a volume, which should serve for a register of the Triumphs of Man. In which work I approve the design of Valerius Maximus and C. Pliny, and wish for their diligence and judgment.

With regard to the doctrine concerning the League or Common Bond between the soul and body, it is distributed into two parts. For as in all leagues and amities there is both mutual intelligence and mutual offices, so the description of this league of soul and body consists in like manner of two parts: namely, how these two (that is the Soul and the Body) disclose the one the other, and how they work the one upon the other; by knowledge or indication, and by impression. The former of these (that is, the description of what knowledge of the mind may be obtained from the habit of the body, or of the body from the accidents of the mind) has begotten two arts; both of prediction; whereof the one is honoured with the inquiry of Aristotle, and the other of Hippocrates. And although they have of later times been polluted with superstitious and fantastical arts, yet being purged and restored to their true state, they have both a solid ground in nature and a profitable use in life. The first is Physiognomy, which discovers the dispositions of the mind by the lineaments of the body; the second is the Interpretation of Natural Dreams, which discovers the state and disposition of the body by the agitations of the mind. In the former of these I note a deficience. For Aristotle has very ingeniously and diligently handled the structure of the body when at rest, but the structure of the body when in motion (that is, the gestures of the body) he has omitted; which nevertheless are equally within the observations of art, and of greater use and advantage [11]. For the lineaments of the body disclose the dispositions and inclinations of the mind in general; but the motions and gestures of the countenance and parts do not only so, but disclose likewise the seasons of access, and the present humour and state of the mind and will. For as your Majesty says most aptly and elegantly, "As the tongue speaketh to the ear so the gesture speaketh to the eye" [12]. And well is this known to a number of cunning and astute persons; whose eyes dwell upon the faces and gestures of men, and make their own advantage of it, as being most

[9] Tac. Ann. xv. 67. In the same spirit Giordano Bruno told his judges that it might well be that they had felt more fear in condemning him than he in hearing himself condemned.

[10] The Elector of Saxony, of whom this story is told, was, in 1547, irregularly condemned to death by Charles V. The sentence was not executed; and it seems doubtful whether the Emperor ever intended that it should be.

According to De Thou, the Elector, after making some remark on the Emperor's injustice, resumed and won the game.

[11] The physiognomical method of Aristotle consists chiefly in tracing the resemblances which exist between different kinds of animals and different individuals of the human species; a method followed by later writers, particularly G. B. Porta, and Lebrun, whose illustrations of his theory are well known, though the essay which they accompanied seems to have been lost.

[12] "For as the tongue speaketh to the eares, so doeth the gesture speake to the eyes of the auditour."—*Basilicon Doron*, book iii.—*J. S.*

part of their ability and wisdom. Neither indeed can it be denied, but that it is a wonderful index of simulation in another, and an excellent direction as to the choice of proper times and seasons to address persons; which is no small part of civil wisdom. Nor let any one imagine that a sagacity of this kind may be of use with respect to particular persons, but cannot fall under a general rule; for we all laugh and weep and frown and blush nearly in the same fashion; and so it is (for the most part) in the more subtle motions. But if any one be reminded here of chiromancy, let him know that it is a vain imposture, not worthy to be so much as mentioned in discourses of this nature. With regard to the Interpretation of Natural Dreams, it is a thing that has been laboriously handled by many writers, but it is full of follies. At present I will only observe that it is not grounded upon the most solid foundation of which it admits; which is, that when the same sensation is produced in the sleeper by an internal cause which is usually the effect of some external act, that external act passes into the dream. A like oppression is produced in the stomach by the vapour of indigestion and by an external weight superimposed; and therefore persons who suffer from the nightmare dream of a weight lying on them, with a great array of circumstances. A like pendulous condition of the bowels is produced by the agitation of the waves at sea, and by wind collected round the diaphragm; therefore hypochondriacal persons often dream that they are sailing and tossing on the sea. There are likewise innumerable instances of this kind.

The latter branch of the doctrine of the League (which I have termed Impression) has not yet been collected into an art, but only comes in sometimes dispersedly in the course of other treatises. It has the same relation or antistrophe that the former has. For the consideration is twofold; either how and how far the humours and temperament of the body alter and work upon the mind; or again, how and how far the passions or apprehensions of the mind alter and work upon the body. For the physicians prescribe drugs to heal mental diseases, as in the treatment of phrensy and melancholy; and pretend also to exhibit medicines to exhilarate the mind, to fortify the heart and thereby confirm the courage, to clarify the wits, to corroborate the memory, and the like. But the diets, and choice of meats and drinks, the ablutions and other observances of the body, in the sect of the Pythagoreans, in the heresy of the Manicheans, and in the law of Mahomet, exceed all measure[13]. So likewise the ordinances in the ceremonial law interdicting the eating of the blood and fat, and distinguishing between beasts clean and unclean for meat, are many and strict. Nay, the Christian faith itself (although clear and serene from all clouds of ceremony) yet retains the use of fastings, abstinences, and other macerations and humiliations of the body, as things not merely ritual, but also profitable. The root and life of all which prescripts (besides the ceremony and the exercise of obedience) consist in that of which we are speaking, namely the sympathy of the mind with the state and disposition of the body[14]. But if any man of weak judgment conceive that these impressions of the body on the mind either question the immortality of the soul, or derogate from its sovereignty over the body, a slight answer may serve for so slight a doubt. Let him take the case of an infant in the mother's womb, which is affected by that which affects the mother, and yet is in due time delivered and separated from her body; or of monarchs who, though powerful, are sometimes controlled by their servants, and yet without abatement of their majesty royal.

As for the reciprocal part (which is the operation of the mind and its passions upon the body), it also has found a place in medicine. For there is no physician of any skill who does not attend to the accidents of the mind, as a thing most material towards recoveries, and of the greatest force to

[13] All these are probably surpassed by the Institutes of Menu, so far as they relate to the way of life of the Brahmins.

[14] The difficulty of conceiving the nature of the reciprocal influence of the mind and body led to its being altogether rejected by Malebranche and by Leibnitz. See the *Theodicæa* of the latter for a statement of the three theories, namely that of physical influence, that of occasional causes, and that of pre-established harmony.

further or hinder other remedies. But another question pertinent to this subject has been but sparingly inquired into, and nowise in proportion to its depth and worth; namely how far (setting the affections aside) the very imagination of the mind, or a thought strongly fixed and exalted into a kind of faith, is able to alter the body of the imaginant. For although it has a manifest power to hurt, yet it follows not that it has the same degree of power to help; no more indeed than a man can conclude, that because there are pestilent airs, able suddenly to kill a man in health, therefore there should be sovereign airs, able suddenly to cure a man in sickness. Such an inquiry would surely be of noble use; though it needs (as Socrates says [15]) a *Delian diver;* for it lies deep. Again, among those doctrines concerning the League, or the concordances between the mind and body, there is none more necessary than the inquiry concerning the proper seats and domiciles which the several faculties of the mind occupy in the body and its organs. Which kind of knowledge has not been without its followers; but what has been done in it is in most parts either disputed or slightly inquired; so that more diligence and acuteness is requisite. For the opinion of Plato [16], who placed the understanding in the brain, as in a castle; animosity (which he unfitly enough called anger, seeing it is more related to swelling and pride) in the heart; and concupiscence and sensuality in the liver; deserves neither to be altogether despised nor to be eagerly received. Neither again is that arrangement of the intelleetual faculties (imagination, reason, and memory) according to the respective ventricles of the brain, destitute of error. Thus then have I explained the doctrine concerning the nature of man undivided, and likewise the league between the mind and body.

CHAPTER II.

Division of the doctrine concerning the Body of Man into Medicine, Cosmetic, Athletic, and Voluptuary. *Division of Medicine into three offices;* viz. the Preservation of Health, the Cure of Diseases, and the Prolongation of Life; *and that the last division concerning the Prolongation of Life ought to be kept separate from the other two.*

The doctrine that concerns man's body receives the same division as the good of man's body, to which it refers. The good of man's body is of four kinds; Health, Beauty, Strength, and Pleasure. The knowledges therefore are in number the same; Medicine, Cosmetic, Athletic, and Voluptuary, which Tacitus truly calls "educated luxury" [1].

Medicine is a most noble art, and according to the poets has a most illustrious pedigree. For they have represented Apollo as the primary god of medicine, and given him a son Æsculapius, likewise a god, professor of the same; seeing that in nature the sun is the author and source of life, the physician the preserver and as it were the second fountain thereof. But a far greater honour accrues to medicine from the works of our Saviour, who was the physician both of soul and body; and as he made the soul the peculiar object of his heavenly doctrine, so he made the body the peculiar object of his miracles. For we nowhere read of any miracle done by him with respect to honours or money (except that one, for giving tribute money to Cæsar), but only with respect to the body of man, for the preservation, support, or healing thereof.

This subject of medicine (namely 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 subtlety and variety of the subject, as it supplies abundant means of healing, so it involves great facility of failing. And therefore as this art (especially as we now have it) must be reckoned as one of the most conjectural, so the inquiry of it must be accounted one of the most exact and difficult. Not that I share the idle notion of Paracelsus and the alchemists, that there are to be found in man's body certain correspondences and parallels which have respect to all the several species (as stars, planets, minerals) which are extant in the universe; foolishly and stupidly misapplying the ancient emblem (that man was a *microcosm*

[15] Diog. Laërt. ii. 22. and ix. 12.
[16] Plato, *Timæus*, p. 71.
[1] Tac. *Ann.* xvi. 18.

or epitome of the world) to the support of this fancy of theirs. But yet thus much is true, that (as I was going to say) of all substances which nature has produced man's body is the most multifariously compounded. For we see herbs and plants are nourished by earth and water; beasts for the most part by herbs and fruits; but man by the flesh of those beasts (quadrupeds, birds, and fishes), and also by herbs, grains, fruits, juices, and liquors of various kinds; not without manifold commixtures, dressings, and preparations of these several bodies, before they come to be his food and aliment. Add to this, that beasts have a more simple manner of life, and fewer affections to work upon their bodies, and those much alike in their operations; whereas man in his places of habitation, exercises, passions, sleep and watching, undergoes infinite variations; so that it is true that the body of man, of all other things, is of the most fermented and 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 [2].

Whence it is no marvel that the soul so placed enjoys no rest; according to the axiom that the motion of things out of their place is rapid, and in their place calm. But to return. This variable and subtle composition and structure of man's body has made it as a musical instrument of much and exquisite workmanship, which is easily put out of tune. And therefore the poets did well to conjoin music and medicine in Apollo; because the genius of both these arts is almost the same; for the office of the physician is but to know how to stretch and tune this harp of man's body that the harmony may be without all harshness or discord. So then the subject being so inconstant and variable has made the art by consequence more conjectural; and the art being so conjectural has made so much more room not only for error, but also for imposture. For almost all other arts and sciences are judged by their power and functions, and not by the successes and events. The lawyer is judged by the virtue of his pleading and speaking, not by the issue of the cause; the master of the ship is judged by his skill in steering, and not by the fortune of the voyage. But the physician, and perhaps the politician, have no particular acts whereby they may clearly exhibit their skill and ability; but are honoured or disgraced according to the event;—a most unfair way of judging. For who can know, if a patient die or recover, or if a state be preserved or ruined, whether it be art or accident? And therefore many times the impostor is prized, and the man of virtue censured. Nay, such is the weakness and credulity of men, that they will often prefer a witch or mountebank to a learned physician. And therefore the poets were clear-sighted when they made Circe sister of Æsculapius, and both children of the Sun; as is expressed in the verses,—respecting Æsculapius, that he was the son of Apollo.

Ipse repertorem medicinæ talis et artis
Fulmine *Phœbigenam* Stygias detrusit ad undas [3];

and again respecting Circe, that she was the daughter of the Sun,

Dives inaccessos ubi *Solis filia* lucos
Urit odoratam nocturna in lumina cedrum [4].

For in all times, in the opinion of the multitude, witches and old women and impostors have been the rivals in a manner of physicians, and almost contended

[2] Virg. *Æn.* vi. 747:—

—— pure and unmixed
The ethereal sense is left—mere air and fire.

[3] Virg. *Æn.* vii. 772:—

Apollo's son the healing art who gave
Jove hurled with thunder to the Stygian wave.

[4] Virg. *Æn.* vii. 11:—

Where *the Sun's daughter* in her deep retreat
Burns for her evening light the cedar sweet.

with them in celebrity for working cures. And what follows? Even this, that physicians say to themselves, as Solomon expresses it upon a higher occasion [5], "If it befall to me as befalleth to the fool, why should I labour to be more wise?" And therefore I can the less blame physicians that they commonly attend to some other art or practice, which they fancy more than their own. For you have among them poets, antiquaries, critics, rhetoricians, statesmen, divines; and in every one of these arts more learned than in their own profession. Nor does this happen, in my opinion, because (as a certain declaimer against the sciences objects to the physicians) they have so many sad and disgusting objects to deal with that they must needs withdraw their minds to other things for relief (for "he that is a man should not think anything that is human alien to him") [6]; but rather upon the ground we are now on, that they find that mediocrity and excellency in their art make no difference in profit or reputation towards their fortune. For the impatience of disease, the sweetness of life, the flattery of hope, the commendations of friends, make men depend upon physicians with all their defects. But yet if these things be more attentively considered, they tend rather to inculpate physicians than to excuse them. For instead of throwing away hope, they ought to put on more strength. For if any man will awake his observation and look a little about him, he will easily see from obvious and familiar examples what a mastery the subtlety and acuteness of the intellect has over the variety either of matter or of 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 help of his eye, of the force of his imagination, and the steadiness of his hand, can imitate and draw the faces of all men that are, have been, or shall be, if they were only brought before him. Nothing more variable than the human voice, yet we easily distinguish the differences of it in different persons; nay and there are buffoons and pantomimes who will imitate and express to the life as many as they please. Nothing more variable than the differing sounds of words, yet men have found the way to reduce them to a few simple letters. And most true it is that perplexities and incomprehensions in science proceed commonly not from any want of subtlety or capacity in the mind, but from the object being placed too far off. For as the sense when at a distance from the object is full of mistaking, but when brought near enough does not much err, so is it with the understanding. But men are wont to look down upon nature as from a high tower and from a great distance, and to occupy themselves too much with generalities; whereas if they would come down and draw near to particulars and take a closer and more accurate view of things themselves, they would gain a more true and profitable knowledge of them. Wherefore the remedy of this evil is not merely to quicken or strengthen the organ, but also to go nearer to the object. And therefore there is no doubt but if the physicians would for a while set these generalities aside and go forth to meet Nature, they would obtain that of which the poet speaks,

> Et quoniam variant morbi, variabimus artes;
> Mille mali species, mille salutis erunt [7].

Which they should the rather do, because those very philosophies which physicians, whether regular practitioners or chemists, rely upon (and medicine not founded on philosophy is a weak thing) are themselves of little worth. Wherefore if generalities, though true, have the fault that they do not well lead the way to action; surely there is greater danger in those generalities which are in themselves false, and instead of leading mislead.

[5] Eccles. ii. 15.

[6] Ter. *Heauton.* i. 1. 25:—Homo sum; humani nihil a me alienum puto.

[7] Ovid. *Remed. Amor.* 525:—

> Arts shall as various as diseases be;
> Though sickness take a thousand shapes, yet we
> Will find for each its several remedy.

Bacon deviates, probably intentionally, from the original, which begins: "Et quoniam variant *animi*, variamus et artes".

Medicine therefore (as we have seen) is a science which has been hitherto more professed than laboured, and yet more laboured than advanced; the labours spent on it having been rather in a circle, than in progression. For I find in the writers thereon many iterations, but few additions. I will divide it into three parts, which I will term its three offices; the first whereof is the Preservation of Health, the second the Cure of Diseases, and the third the Prolongation of Life. But this last the physicians do not seem to have recognised as the primary part of their art, but to have confounded, ignorantly enough, with the other two. For they imagine that if diseases be repelled before they attack the body, and cured after they have attacked it, prolongation of life necessarily follows. But though there is no doubt of this, yet they have not penetration to see that these two offices pertain only to diseases, and such prolongation of life as is intercepted and cut short by them. But the lengthening of the thread of life itself, and the postponement for a time of that death which gradually steals on by natural dissolution and the decay of age, is a subject which no physician has handled in proportion to its dignity. And let not men make a scruple of it, as if this were a thing belonging to fate and Divine Providence which I am the first to bring within the office and function of art. For Providence no doubt directs all kinds of death alike, whether from violence or disease or the decay of age; yet it does not on that account exclude the use of preventions and remedies. But art and human industry do not command nature and destiny; they only serve and minister to them. Of this part however I will speak hereafter; having in the meantime premised thus much, lest any one should in ignorance confound this third office of medicine with the two former, as has been done hitherto.

With regard to the office of the preservation of health (the first of the three), many have written thereon, very unskilfully both in other respects and especially in attributing too much (as I think) to the choice of meats and too little to the quantity. Moreover with regard to quantity itself they have argued like moral philosophers, too much praising the mean; whereas both fasting, when made customary, and a generous diet, to which one is used, are better preservations of health than those mediocrities, which only make nature slothful and unable to bear either excess or want when it is necessary. Nor have the kinds of exercises which have most power to preserve health been by any physician well distinguished and pointed out; although there is scarcely any tendency to disease which may not be prevented by some proper exercise. Thus playing at bowls is good for diseases of the reins, archery for those of the lungs, walking and riding for weakness of the stomach, and the like. But as this part touching the preservation of health has been handled as a whole, it is not my plan to pursue the minor defects.

With regard to the cure of diseases, much labour has been bestowed on this part, but with slight profit. To it belongs the knowledge of the diseases to which the human body is subject; with their causes, symptoms, and remedies. In this second office of medicine there are many deficiencies; a few of which, but those the most glaring, I will propound; thinking it sufficient to enumerate them without any law of order or method.

The first is, the discontinuance of the very useful and accurate diligence of Hippocrates, who used to set down a narrative of the special cases of his patients; relating what was the nature of the disease, what the treatment, and what the issue [8]. Therefore having so notable and proper an example in a man who has been regarded as the father of his art, I shall not need to go abroad for an example from other arts; as from the wisdom of the lawyers, who have ever been careful to report the more important cases and new decisions, for instruction and direction in future cases. This continuance of medicinal history I find deficient; especially as carefully and judiciously digested into one body; which nevertheless I do not understand should be either so copious as to extend to every common case of daily occurrence (for that would be something infinite, and foreign to the purpose), or so reserved as to admit none but wonders and prodigies, as has been done by some. For many things are new in the manner and circumstances which are

[8] See Hippocrates' *De Epidemiis*.

not new in the kind ; and if men will apply themselves to observe, they will find even in things which appear commonplace much that is worthy of observation.

Likewise in anatomical inquiries, those things which pertain to man's body in general are most diligently observed, even to curiosity and in the minutest particulars ; but touching the varieties which are found in different bodies, the diligence of physicians falls short. And therefore I say that Simple Anatomy is handled most lucidly, but that Comparative Anatomy is wanting. For men inquire well of the several parts, and their substances, figures, and collocations ; but the diversities of the figure and condition of those parts in different men they observe not. The reason of which omission I judge to be no other than that the former inquiry may be satisfied by the view of one or two anatomies, whereas the latter (being comparative and casual) requires the view and attentive study of many. The first likewise is a subject on which learned men may display their knowledge in lectures and before audiences ; but the last is only to be gained by silent and long experience. Meanwhile there is no question but that the figure and structure of the inward parts is but little inferior in variety and lineaments to the outward ; and that the hearts or livers or stomachs of men differ as much as their foreheads or noses or ears. And in these very differences of the internal parts are often found the "causes continent" [9] of many diseases ; which not being observed by the physicians, they quarrel many times with the humours, which are not in fault, the fault being in the very mechanical frame of the part. In the cure of which diseases it is lost labour to employ medicines alterative (for the part admits not of alteration) ; but the thing must be corrected, and accommodated or palliated by diets and medicines familiar. To Comparative Anatomy belongs likewise the accurate observation as well of all kinds of humours, as of the footsteps and impressions of diseases in various dissected bodies. For the humours are commonly passed over in anatomies with disgust as purgaments ; whereas it is of the first importance to observe of what sort and how manifold the different kinds of humours are (not relying too much on the common divisions of them) which are sometimes found in the human body ; and in what cavities and receptacles each of them is most apt to lodge and nestle, and with what benefit or injury, and the like. So again the footsteps and impressions of diseases and the injuries and devastations they cause in the inward parts, ought in different anatomies to be diligently observed ; namely imposthumations, exulcerations, discontinuations, putrefactions, corrosions, consumptions, contractions, extensions, convulsions, loosenings, dislocations, obstructions, repletions, tumours ; together with all preternatural substances that are found in the human body (as stones, carnosities, excrescences, worms, and the like) ; all these, I say, and the like of them ought by that Comparative Anatomy which I have spoken of, and the collation of the several experiences of many physicians, to be carefully searched out and compared. But this variety of accidents is either slightly handled in anatomics or else passed over in silence.

Of that other defect in anatomy (that it has not been practised on live bodies) what need to speak ? For it is a thing hateful and inhuman, and has been justly reproved by Celsus [10]. But yet it is no less true (as was anciently noted) that many of the more subtle passages, pores, and pertusions appear not in anatomical dissections, because they are shut and latent in dead bodies, though they be open and manifest in live [11]. Wherefore that utility may be considered as well as hu-

[9] The phrase is taken from Celsus, *præfatio*.

[10] "Insidere autem vivorum corpora et crudele et supervacuum est." *Id. ib.*

[11] This difficulty is almost entirely removed by the perfection to which the art of making anatomical preparations has been brought. Berengario of Carpi, who died at Ferrara in 1550, is said to have been the first person who made use of injections in order to render the vessels visible. He employed water (probably coloured) for this purpose. Swammerdam was the first to inject with wax. In one branch of anatomy, namely the doctrine of the development of the osseous parts, the use of madder in the food of the living animal has led to very curious results. It stains the portions of bone developed during its use of a bright red. Duhamel was the first to use this means of studying the growth of bone. Flourens has also employed it.

manity, the anatomy of the living subject is not to be relinquished altogether, nor referred (as it was by Celsus) to the casual practices of surgery; since it may be well discharged by the dissection of beasts alive, which, notwithstanding the dissimilitude of their parts to human, may, with the help of a little judgment, sufficiently satisfy this inquiry [12].

Again, in their inquiry concerning diseases, they find many which they pronounce incurable, some at their very commencement, and others after a certain period. So that the proscriptions of Sylla and the Triumvirs were as nothing to the proscriptions of physicians, wherein by most iniquitous edicts they give up so many to death; of whom nevertheless numbers escape with less difficulty than they did in the Roman proscriptions. Therefore I will not hesitate to set down among the *desiderata* a work on the cure of diseases which are held incurable; that so some physicians of eminence and magnanimity may be stirred up to take this work (as far as the nature of things permits) upon them; since the pronouncing these diseases incurable gives a legal sanction as it were to neglect and inattention, and exempts ignorance from discredit.

Again, to go a little further; I esteem it likewise to be clearly the office of a physician, not only to restore health, but also to mitigate the pains and torments of diseases; and not only when such mitigation of pain, as of a dangerous symptom, helps and conduces to recovery; but also when, all hope of recovery being gone, it serves only to make a fair and easy passage from life. For it is no small felicity which Augustus Cæsar was wont so earnestly to pray for, that same *Euthanasia* [13]; which likewise was observed in the death of Antoninus Pius, which was not so much like death as like falling into a deep and pleasant sleep. And it is written of Epicurus, that he procured the same for himself; for after his disease was judged desperate, he drowned his stomach and senses with a large draught and ingurgitation of wine; whereupon the epigram was made,

—— hinc Stygias ebrius hausit aquas [14].

He drowned in wine the bitterness of the Stygian water. But in our times, the physicians make a kind of scruple and religion to stay with the patient after he is given up, whereas in my judgment, if they would not be wanting to their office, and indeed to humanity, they ought both to acquire the skill and to bestow the attention whereby the dying may pass more easily and quietly out of life. This part I call the inquiry concerning *outward Euthanasia*, or the easy dying of the body (to distinguish it from that Euthanasia which regards the preparation of the soul); and set it down among the desiderata.

Again, in the cures of diseases I generally find this deficience; that the physicians of this age, though they pursue well enough the general intentions of cures, yet the particular receipts which are proper for the cure of particular diseases they either do not well understand or do not scrupulously observe. For physicians have frustrated and destroyed the fruit of tradition and experience by their magistralities, in adding and taking away and making changes in their receipts at their pleasure; and substituting *quid pro quo*, much like the chemist; usurping such command over the medicine, that the medicine loses all command over the disease. For except it be treacle and mithridate, and perhaps diascordium and the confection of alkermes [15], and a few other medicines, they tie themselves

[12] Even this in the extent to which it has been carried appears to stand much in need of an apology; and it is satisfactory to find that one of our best anatomists seems to think so. I refer to Brodie's *Physiological Enquiries*.

[13] Sueton. in August. c. 99.

[14] Cf. Diog. Laërt. x. 16.

[15] Theriaca, from which treacle is a corruption, is the name of a nostrum invented by Andromachus, who was physician to Nero. For an account of the history and composition of mithridaticum, see Celsus, v. 23. The invention of what was called diascordium is ascribed to Fracastorius, who speaks of it as "Diascordium nostrum" in his *De Cont. Morb. Cur.* iii. 7. The confection of Alkermes in its original form seems to have been invented by Mesné, an Arabian physician. About Bacon's time what was called mineral kermes, which was a preparation of antimony, was a popular medicine, but it is probable that he here refers either to the confection of Mesné or to some modification of it.

to scarce any certain receipts severely and religiously. For as to those confections which are for sale in the shops, they are rather in readiness for general intentions than accommodated and specially adapted to particular cures; for they do not specially regard any one disease, but relate generally to purging, opening, comforting, and altering. And this is principally the cause why empirics and old women are more happy many times in their cures than learned physicians, because they are more exact and religious in holding to the composition and confection of tried medicines. Indeed I remember a physician here in England, a famous practitioner, in religion almost a Jew, in reading a kind of Arab, who used to say, "Your physicians in Europe are indeed men of learning; but they do not know the particular cures for disease". He would also say in jest, not very reverently, "that our physicians are like bishops, who have the power of the keys, to bind and loose, and nothing more". But to speak seriously; I conceive that it would be of great use if some physicians, among the more distinguished both for learning and practice, would compose a work on medicines tried and approved by experiment for the cure of particular diseases. For if it be thought fitter for a learned physician (after taking account of the constitution and age of his patients, the season of the year, their customs, and the like) to apply his medicines according to the occasion, than to abide by any certain prescriptions, the opinion, though plausible, is fallacious, and allows too little weight to experience, and too much to judgment. For as they were the most useful citizens and of the best composition in the state of Rome, who either being consuls inclined to the people, or being tribunes inclined to the senate; so in the matter we now handle, they are the best physicians, who being great in learning most incline to the traditions of experience, or being distinguished in practice do not reject the methods and generalities of art. As to the qualifying of medicines (if it be ever necessary), it ought rather to be done in the vehicles than in the body of the medicines, wherein nothing should be altered without evident necessity. This part therefore, which treats of authentic and positive medicines, I set down as wanting. But it is a thing that should not be undertaken without keen and severe judgment, and in synod, as it were, of select physicians.

Again, in preparation of medicines I find it strange (especially considering how mineral medicines have been so much lauded and extolled by the chemists [16], and that such medicines are safer applied outwardly than taken inwardly) that no man has endeavoured to make an imitation by art of natural baths and medicinal fountains; although it is confessed that they receive their virtues from the mineral veins through which they flow; and not only so, but as a manifest proof of the fact, human industry has found the way to discern and distinguish by analysis from what kind of mineral such waters receive tincture; as sulphur, vitriol, steel, or the like. Which natural tincture if it might be reduced to compositions of art would put it in the power of man to make more kinds of them as occasion demands, and to regulate their temper at discretion. This part therefore, concerning the imitation of nature in artificial baths (an undertaking doubtless both easy and profitable), I judge to be deficient.

But lest I grow to be more particular than is agreeable either to my intention or to the nature of this treatise, I will conclude this part with the note of one deficience more, which seems to me of greatest consequence; which is, that the method of treatment in use is too compendious to accomplish anything remarkable or difficult. For in my judgment it would be an opinion more flattering than true, to think any medicine can be so sovereign or so happy as that the simple use of it can work any great cure. It were a strange speech, which spoken once, or even spoken many times, should reclaim a man from a vice to which he is by nature subject. The thing is impossible. It is order, pursuit, sequence, and skilful interchange of application, which is mighty in nature. And these things, although they require greater judgment in prescribing and more constant obedience in observing, yet make up for it abundantly by the magnitude of the effects

[16] The school of medicine of which Paracelsus was the head distinguished itself from the Galenists, who had chiefly recourse to vegetable decoctions and infusions, by the use of mineral medicines. This school has been called that of the Iatro-chemists.

they produce. Now although a man would think, by the daily attentions which physicians pay to their patients,—their visitations, nursings, and prescriptions,—that they were pursuing the cure diligently and following it up by a certain path; yet let a man look more deeply into the prescripts and ministrations which physicians use and he shall find the most of them full of vacillation and inconstancy, devices of the moment, without any settled or foreseen course of cure; whereas they ought from the very first, as soon as ever the disease is fully discovered and known, to resolve upon some regular plan of treatment, and not to depart therefrom without grave reason. And let physicians be assured of this: that there may be (for example) three or four medicines rightly prescribed for the cure of some serious disease, which if taken in proper order and at proper intervals will work the cure; but if taken either singly, or in a different order, or without the interval, will prove most injurious. I do not mean that every scrupulous and superstitious prescript should be taken for the best (no more than every strait way is the way to heaven); the way must be the right way no less than the strait and difficult one. This part then, which I will call the *Physician's Clue*, I set down as deficient. And these are the things I find wanting in that part of medicine which relates to the cure of diseases: only there is one thing still remaining, which is of more consequence than all the rest;—namely, a true and active Natural Philosophy for the science of medicine to be built upon. But that does not belong to the present treatise.

The third part of medicine which I have set down is that which relates to the Prolongation of Life, which is new, and deficient; and the most noble of all. For if such a thing may be discovered, the business of medicine will no longer be confined to humble cures, nor will physicians be honoured only for necessity; but for a gift to men—of earthly gifts perhaps the greatest—of which, next to God, they may become the dispensers and administrators. For although to a Christian making for the Land of Promise the world is but a wilderness, yet even while we travel in the wilderness to have our shoes and garments (that is our bodies, which are as the clothing of the soul) not worn out by the way, must be accounted as a gift of divine grace. Upon this subject then, seeing it is of such excellence, and that I have set it down as wanting, I will after my manner give both admonitions, and directions, and precepts.

My first admonition is, that of the writers upon this argument there is none who has discovered anything great, not to say anything sound. Aristotle has indeed published a very short commentary upon it [17], in which there is some acuteness: which he, as usual, will have to be everything. But more modern writers have handled it so idly and superstitiously, that by reason of their vanity the argument itself has come to be reputed vain and senseless.

My second admonition is, that the very intentions of physicians in this matter are worth nothing, and rather serve to draw men's thoughts away from the point than to direct them to it. For they tell us that death consists in the destitution of warmth and moisture; and therefore that the natural warmth should be comforted, and the radical moisture cherished. Just as if this could be done by broths, or lettuces and mallows, or starch, or jujubes, or spices, or generous wines, or even spirits of wine and chemical oils; all of which are rather injurious than beneficial.

My third admonition is, that men should cease from trifling, nor be so credulous as to imagine that so great a work as this of delaying and turning back the course of nature can be effected by a morning draught or by the use of some precious

[17] Aristotle's tract *De Long. et Brev. Vitæ*, which, as Bacon remarks, is very brief, relates to the length of life of all kinds of animals, and even of plants. Sanchez, a Spanish physician, who wrote a treatise on the same subject, thus remarks on Aristotle's: "Adeo longè breviterque disseruit Aristoteles, ut mirum sit tantum philosophum tam indignè rem hanc tractâsse". Not long before the publication of the *De Augmentis*, the *Methusala Vivax* of Dornavus was printed at Hanover; it contains an inquiry as to the causes of antediluvian longevity; Dornavus refutes the notion that the years in which the ages of the Patriarchs are stated are in reality only lunations, by referring to their ages when their first-born sons were begotten.

drug; by potable gold, or essence of pearls, or suchlike toys;—but be assured prolongation of life is a work of labour and difficulty and consisting of a great number of remedies, and those aptly connected one with another. For let no man be so dull as to believe that a thing which has never yet been done can be done now except by means yet unattempted.

My fourth admonition is, that men should rightly observe and distinguish between those things which conduce to a healthy life, and those which conduce to a long life. For there are some things which tend to exhilarate the spirits, strengthen the bodily functions, and keep off diseases, which yet shorten the sum of life, and without sickness hasten on the decay of old age. There are others also which are of service to prolong life and retard decay, which yet cannot be used without danger to health, so that they who use them for the prolongation of life should at the same time provide against such inconveniences as may arise from their use. And so much by way of admonition.

With regard to directions, the idea I have formed of the matter is this. Things are preserved and continued in two ways; either in their own identity, or by repair. In their own identity, as a fly or an ant in amber; a flower or an apple or wood in conservatories of snow; a corpse in balsam. By repair, as in flame, and in things mechanical. Now he that seeks to effect the prolongation of life must use both methods (for separate they have less power); and the human body must be preserved as bodies inanimate, and again as flame, and lastly to a certain degree as things mechanical are preserved. Therefore there are three intentions for the prolongation of life; prevention of waste, goodness of repair, and renewal of that which has begun to grow old. Waste is caused by two depredations; that of the native spirit, and that of the surrounding air. Both of these may be prevented in two ways; either by making those agents less predatory, or the patients (that is, the juices of the body) less susceptible of being preyed on. The spirit is made less predatory if it be either condensed in substance, as in the use of opiates and preparations of nitre, and in mortifications; or diminished in quantity, as in Pythagorean and monastic diets; or quieted in motion, as in leisure and tranquillity. The surrounding air becomes less predatory, when it is either less heated by the rays of the sun, as in cold climates, caves, mountains, and the columns of anchorites; or kept from the body, as by thick skins, the plumage of birds, and the use of oils and unguents without spices. The juices of the body are made less perceptible of depredation, by being rendered either hard, or roscid and oily: hard, as by rough diet, living in the open air, strong exercises, and some mineral baths; roscid, as by the use of sweet things, abstaining from salts and acids, and most of all by such a composition of drink as has very fine and subtle parts, yet free from all acrimony or acidity. Repair is produced by aliments. Now alimentation is promoted in four ways; by the digestion of the bowels to send out the nourishment, as is done by medicines comforting the principal bowels; by excitation of the external parts to attract the aliment, as by exercises, proper frictions, some proper unctions and baths; by preparation of the aliment itself, so that it may insinuate itself more easily and to a certain extent anticipate digestion, as in the various artificial modes of preparing food, mixing drink, fermenting bread, and combining together the virtues of these three; by comforting the last act of assimilation, as in seasonable sleep, and some external applications. The renovation of what has begun to grow old takes place in two ways; either by the inteneration of the habit of body itself, as in the use of baths, plasters, and unguents, which act so as to sink in without drawing anything out; or by draining out the old moisture and substituting new, as in seasonable and frequent purgings, lettings of blood, and attenuating diets, which restore the flower of the body. And so much for directions.

As for precepts, though many may be deduced from the directions themselves, I think fit to subjoin three as principal. The first is, that prolongation of life is to be expected rather from periodical diets, than from any familiar regimen of living, or even from the excellence of particular recipes. For things which have sufficient strength to turn back the course of nature are generally so strong, and produce such alterations, that they cannot be compounded with any medicine

much less mixed with common food. It remains therefore, that they be used in series, and regularly, and at set times recurring at certain intervals.

The second is, that prolongation of life is to be expected rather from working on the spirits and from the softening of the parts, than from the modes of alimentation. For there being three things which act upon the human body and frame (not taking external accidents into account), namely the spirits, the parts, and the aliments; the way of prolonging life by the modes of alimentation is tedious and circuitous; whereas the ways by working on the spirits and on the parts are much shorter, and sooner attain the desired end; because the spirits are immediately affected both by vapours and passions, which have strange power upon them; and the parts by baths, unguents, and plasters, which also make sudden impressions.

The third is, that the softening of the parts from without should be effected by things of kindred substance, things that impress, and things that close up. For things of kindred substance are kindly and readily embraced and taken in by the parts, and perform the proper office of emollients: things that impress not only act as vehicles for the virtue of the emollients, making it sink more easily and deeper, but themselves also expand the parts a little; while things that close up retain and keep in and fix for awhile the virtue of both the others, and restrain perspiration, which is a thing opposed to the softening process, because it lets out the moisture. And so by these three (but rather disposed in order and succeeding each other, than mixed together) is the thing accomplished. At the same time I would have it understood that the intention of the softening is not to nourish the parts from without, but only to make them apter to receive nourishment. For whatever is more dry is less active in assimilating. And so much for the Prolongation of Life, now newly assigned to medicine, as the third part.

We come now to Cosmetic, which has parts civil and parts effeminate. For cleanness and decency of body is rightly esteemed to proceed from a modesty of manners, and from reverence, first of all towards God whose creatures we are; then towards society wherein we live; and then also towards ourselves, whom we ought to reverence not less, but rather more, than others. But that adulterate decoration, which makes use of dyes and pigments, is well worthy of the deficiencies which always attend it; being neither fine enough to deceive, nor convenient enough for use, nor safe and wholesome enough for health. And I wonder that this depraved custom of painting has been by the penal laws, both ecclesiastical and civil (which have been very severe against extravagance in apparel and effeminate dressing of the hair), so long overlooked. We read indeed of Jezebel, that she painted her face; but nothing of the kind is said of Esther or Judith.

Let us now proceed to Athletic. This I take in a sense somewhat larger than that in which it is usually understood. For to it I refer everything which conduces to the procuring of any kind of ability of which the human body is capable; whether of agility or of endurance. Agility has two parts, strength and swiftness; endurance has likewise two, patience of natural wants, and fortitude under torments. Of all which we often see remarkable examples, in the practice of tumblers, in the hard living of some savages, in the stupendous strength of maniacs, and in the constancy of some persons under exquisite tortures. And if there be found any other faculty not falling into the former divisions (such as the wonderful power of holding the breath, which is often seen in divers), I mean it to be referred to this art. Now that such things can sometimes be done, is very plain; but the philosophy and inquisition of causes relating to them is almost neglected; the rather, I think, because it is thought that such masteries of nature are only attained either by a peculiar aptness of nature in some men, which cannot be taught, or by continual custom from boyhood, a thing which depends upon authority rather than upon teaching. Which though it be not altogether true, yet of what avail is it to note defects in matters of this kind? For the Olympic Games are over long since; and besides in such things mediocrity is enough for use, excellency in them serving for the most part only for mercenary ostentation.

Lastly I come to Arts of Pleasure Sensual, which are divided according to the senses themselves. The pleasure of the eye is chiefly Painting, with a number of other arts (pertaining to magnificence) which respect houses, gardens, vestments, vases, cups, gems, and the like. The pleasure of the ears is Music, with its various apparatus of voices, wind, and strings; water instruments, once regarded as the leaders of this art, are now almost out of use. Of all these arts those which belong to the eye and ear are esteemed the most liberal; for these two senses are the purest; and the sciences thereof are the most learned, as having mathematics like a handmaid in their train. The one also has some reference to memory and demonstrations, the other to morality and the passions of the mind. The pleasures of the other senses, and the arts relating to them, are less esteemed; as being more allied to luxury than magnificence. For unguents, odours, the dainties and pleasures of the table, and most of all the stimulants of lust, need rather laws to repress than arts to teach them. It has been well observed by some that military arts flourish at the birth and rise of states; liberal arts when states are settled and at their height; and voluptuary arts when they are turning to decline and ruin. And I fear that this our age of the world, as being somewhat upon the descent of the wheel, inclines to arts voluptuary. Wherefore let these things pass. With arts voluptuary I couple arts jocular; for the deceiving of the senses is one of the pleasures of the senses.

And now having run over the doctrines concerning the body of man (Medicine, Cosmetic, Athletic, and the Art Voluptuary), I give this notice in passing; that whereas so many things come into consideration in the human body, parts, humours, functions, faculties, and accidents; and that (if it were a new matter) it would be fit that there should be a single body of learning touching the human body containing them all (like that doctrine concerning the soul, of which I shall soon come to speak); yet to avoid the too great multiplication of arts, or the transposition (more than need be) of their ancient limits, I receive the doctrine concerning the parts of the human body,—the functions, humours, respiration, sleep, generation, the fœtus and gestation in the womb, growth, puberty, old age, fatness, and the like,—into the body of medicine; not that they properly belong to those three offices, but because the human body is in everything the subject of medicine. But voluntary motion and sense I refer to the doctrine concerning the soul, because in these two the soul plays the principal part. And so much for the philosophy concerning the body of man; which is but the tabernacle of the mind.

CHAPTER III.

Division of Human Philosophy relating to the Soul into Doctrine concerning the Breath of Life *and Doctrine concerning the* Sensible or Produced Soul. *Second Division of the same Philosophy into Doctrine concerning the* Substance and Faculties of the Soul. *and Doctrine concerning the* Use and Objects of the Faculties. *Two Appendices of the Doctrine concerning the Faculties of the Soul; Doctrine concerning* Natural Divination *and Doctrine concerning* Fascination. *Distribution of the Faculties of the Sensible Soul into* Motion *and* Sense.

Let us now proceed to the doctrine which concerns the Human Soul, from the treasures whereof all other doctrines are derived. The parts thereof are two; the one treats of the rational soul, which is divine; the other of the irrational, which is common with brutes. I mentioned a little before (in speaking of Forms) the two different emanations of souls, which appear in the first creation thereof; the one springing from the breath of God, the other from the wombs of the elements. For touching the first generation of the rational soul, the Scripture says, "He hath made man of the dust of the earth, and breathed into his nostrils the breath of life"; whereas the generation of the irrational soul, or that of the brutes, was effected by the words, "Let the water bring forth; let the earth bring forth."[1] Now this soul (as it exists in man) is only the instrument of the

[1] To the same effect S. Thomas Aquinas says: "Anima brutorum producitur ex virtute aliquâ corporeâ, anima vero humana a Deo. Et ad hoc significandum dicitur Gen. i.

rational soul, and has its origin like that of the brutes in the dust of the earth. For it is not said that "He made the body of man of the dust of the earth," but that "He made man"; that is the entire man, excepting only the breath of life. Wherefore the first part of the general doctrine concerning the human soul I will term the doctrine concerning the Breath of Life; the other the doctrine concerning the Sensible or Produced Soul. But yet, as hitherto I handle philosophy only (for I have placed sacred divinity at the end of the work), I would not borrow this division from theology, if it were not consonant with the principle of philosophy also. For there are many and great excellencies of the human soul above the souls of brutes, manifest even to those who philosophise according to the sense. Now wherever the mark of so many and great excellencies is found, there also a specific difference ought to be constituted; and therefore I do not much like the confused and promiscuous manner in which philosophers have handled the functions of the soul; as if the human soul differed from the spirit of brutes in degree rather than in kind; as the sun differs from the stars, or gold from metals.

I must subjoin likewise another division of the general doctrine concerning the human soul before I speak more fully of the species. For that which I shall hereafter say of the species will concern both divisions alike; as well that which I have just set down, as that which I am now about to propose. Let this second division therefore be into the doctrine concerning the Substance and Faculties of the soul, and the doctrine concerning the Use and Objects of the Faculties.

Having therefore laid down these two divisions, let us now proceed to the species. The doctrine cocnerning the breath of life, as well as the doctrine concerning the substance of the rational soul, includes those inquiries touching its nature,—whether it be native or adventive, separable or inseparable, mortal or immortal, how far it is tied to the laws of matter, how far exempted from them; and the like. Which questions though even in philosophy they admit of an inquiry both more diligent and more profound than they have hitherto received, yet I hold that in the end all such must be handed over to religion to be determined and defined. Otherwise they will be subject to many errors and illusions of the sense. For since the substance of the soul in its creation was not extracted or produced out of the mass of heaven and earth, but was immediately inspired from God; and since the laws of heaven and earth are the proper subjects of philosophy; how can we expect to obtain from philosophy the knowledge of the substance of the rational soul? It must be drawn from the same divine inspiration, from which that substance first proceeded [2].

The doctrine concerning the sensible or produced soul, however, is a fit subject of inquiry even as regards its substance; but such inquiry appears to me to be deficient. For of what service are such terms as *ultimate act, form of the body*, and such toys of logic, to the doctrine concerning the substance of the soul [3]?

quantum ad alia animalia Producat terra animam viventem; Quantum vero ad hominem dicitur quod inspiravit in faciem ejus spiraculum vitæ."—*Sum. Theol.* i. 75, 6.

But the doctrine that in man there is an irrational soul, as in brutes, to which the rational soul is a distinct addition, is not only not countenanced as M. Bouillet supposes by S. Augustine and the schoolmen (see his edition of Bacon's philosophical works, ii. p. 531), but is distinctly condemned by them. Bacon derived it from Telesius. See General Preface, p. 30.

[2] The anima rationalis is immaterial,—the anima sensibilis is as much material as any other part of man's frame. To it however Telesius, whom Bacon here follows, ascribes sensation, imagination, etc., leaving the higher faculties, and especially the moral sense, as the portion of the anima rationalis. Donius, to whom Bacon refers a little further on, in effect rejects the anima rationalis altogether; admitting, in apparently insincere deference to received opinions, that it may exist; but holding that, if it does so, it is incognisable by human reason.

[3] Bacon refers to the Aristotelian definition of the soul, "Actus primus corporis physici organici vitam potentiâ habentis", and to the doctrine immediately connected with this definition that the soul is the form of man. It is obvious that the actus primus may also be spoken of as actus ultimus, according to the direction in which the arrangement

For the sensible soul—the soul of brutes—must clearly be regarded as a corporeal substance, attenuated and made invisible by heat; a breath (I say) compounded of the natures of flame and air, having the softness of air to receive impressions, and the vigour of fire to propagate its action; nourished partly by oily and partly by watery substances; clothed with the body, and in perfect animals residing chiefly in the head, running along the nerves, and refreshed and repaired by the spirituous blood of the arteries; as Bernardinus Telesius and his pupil Augustinus Donius have in part not altogether unprofitably maintained[4]. Let there be therefore a more diligent inquiry concerning this doctrine; the rather because the imperfect understanding of this has bred opinions superstitious and corrupt and most injurious to the dignity of the human mind, touching metempsychosis, and the purifications of souls in period of years, and indeed too near an affinity in all things between the human soul and the souls of brutes. For this soul is in brutes the principal soul, the body of the brute being its instrument whereas in man it is itself only the instrument of the rational soul, and may be more fitly termed not soul, but spirit. And so much for the substance of the soul.

The faculties of the soul are well known; understanding, reason, imagination, memory, appetite, will; in short all with which the logical and ethical sciences deal. But in the doctrine concerning the soul the origins of these faculties ought to be handled, and that physically, as they are innate and inherent in the soul; the uses only and objects of them being deputed to those other arts. In which part nothing of much value (in my opinion) has as yet been discovered; though I cannot indeed report it as deficient. This part touching the faculties of the mind has likewise two appendices, which themselves also, as they are handled, have rather produced smoke than any clear flame of truth. One of these is the doctrine of Natural Divination, the other of Fascination.

Divination has been anciently and not unfitly divided into two parts; Artificial and Natural. Artificial makes prediction by argument, concluding upon signs and tokens; Natural forms a presage from an inward presentiment of the mind, without the help of signs. Artificial is of two sorts; one argues from causes; the other only from experiments, by a kind of blind authority. Which latter is for the most part superstitious; such as were the heathen observations upon the inspection of entrails, the flights of birds, and the like. And the more solemn astrology of the Chaldeans was little better. But artificial divination of both kinds is dispersed among different knowledges. The astrologer has his predictions, from the position of the stars. The physician likewise has his predictions of approaching death, of recovery, of coming symptoms of diseases, from the urine, the pulse, the look of the patient, and the like. The politician also has his; "O venal city, that will quickly perish, if it finds a purchaser"[5]: which prediction was not long in being verified; being fulfilled in Sylla first, and afterwards in Cæsar. Predictions of this kind therefore are not to our present purpose, but are to be referred to their own arts. But Natural Divination, which springs from the inward power of the mind, is that which I now speak of. This is of two sorts; the one Primitive, the other by Influxion.

proceeds, but I do not know whether Bacon had any reason for deviating from the usual phraseology.

With respect to the phrase "forma corporis," it is to be remarked that the Scotists maintained the existence of a "forma corporis," that namely which gives the body corporeity distinct from the informing principle or soul of man;—a subtlety introduced to evade the difficulties which the gradual development of the body from its first rudiments to perfection,—that is, its gradual progress to corporeity,—appears to present when contrasted with the way in which the rational soul is infused. For it was a received opinion that the soul is not "ex traduce," that is, not derived from that of the progenitor, but on the contrary is infused as it were ab extra into the body it informs.

[4] See the fifth book of Telesius *De Rerum Natura*, and the second book, particularly the fourth and fifth chapters, of Donius *De Naturâ Hominis*; and compare Campanella *De Sensu Rerum*, ii. 4. Campanella follows Telesius more closely than Donius does.

[5] Sallust, in Bell. Jugurth. 38.

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, has of its own essential power some prenotion of things to come. Now this appears most in sleep, in extasies, and near death; and more rarely in waking apprehensions, or when the body is healthy and strong[6]. But this state of mind is commonly induced or furthered by those abstinences and observances which most withdraw the mind from exercising the duties of the body, so that it may enjoy its own nature, free from external restraints. Divination by influxion is grounded upon this other conceit; that the mind, as a mirror or glass, receives a kind of secondary illumination from the foreknowledge of God and spirits; and this also is furthered by the same state and regimen of the body as the other. For the retiring of the mind within itself gives it the fuller benefit of its own nature, and makes it the more susceptible of divine influxions; save that in divinations by influxion the mind is seized with a kind of fervency and impatience as it were of the present Deity (a state which the ancients noted by the name of divine fury); while in primitive divination it is more in a state of quiet and repose.

Fascination is the power and act of imagination intensive upon the body of another (for of the power of imagination upon the body of the imaginant I have spoken above); wherein the school of Paracelsus and the disciples of pretended natural magic have been so intemperate, that they have exalted the power and apprehension of the imagination to be much one with the power of miracle-working faith[7]. Others, that draw nearer to probability, looking with a clearer eye at the secret workings and impressions of things, the irradiations of the senses, the passage of contagion from body to body, the conveyance of magnetic virtues, have concluded that it is much more probable there should be impressions, conveyances, and communications from spirit to spirit (seeing that the spirit is above all other things both strenuous to act and soft and tender to be acted on); whence have arisen those conceits (now become as it were popular) of the mastering spirit, of men unlucky and ill omened, of the glances of love, envy, and the like. With this is joined the inquiry how to raise and fortify the imagination; for if the imagination fortified have so much power, it is worth while to know how to fortify and exalt it. And here comes in crookedly and dangerously a palliation and defence of a great part of ceremonial magic. For it may be speciously pretended that ceremonies, characters, charms, gesticulations, amulets, and the like, do not derive their power from any tacit or sacramental contract with evil spirits, but serve only to strengthen and exalt the imagination of him who uses them. As likewise in religion the use of images to fix the cogitations and raise the devotions of those who pray before them has grown common. My own judgment however is this: though it be admitted, that imagination has power, and further that ceremonies fortify and strengthen that power; and that they be used sincerely and intentionally for that purpose, and as a physical remedy, without any the least thought of inviting thereby the aid of spirits; they are nevertheless to be held unlawful, as opposing and disputing that divine sentence passed upon man for sin, "In the sweat of thy face shalt thou eat bread"[8]. For magic of this kind proposes to attain those noble fruits which God ordained to be bought at the price of labour by a few easy and slothful observances.

[6] A curious illustration of this remark is mentioned in the geography ascribed to Ibn Haukal. When a prince among the Khazars was made Khakan, he was strangled with a piece of taffeta, and asked, when he could scarcely breathe, how long he had to reign. He answered so many years; and if he reached the term, was then put to death. This was also a Turkish usage, except that it does not seem that they put the prince to death if he lived as long as he had foretold. See Klaproth, *Tableaux Hist. de l'Asie*, p. 273.

On the subject of natural divination see Campanella, *De Sensu Rerum*, iii. 7-11. He says of himself: "Ast ego, cum mali quippiam mihi imminet, inter somnium et vigiliam audire soleo vocem clarè loquentem mihi 'Campanella, Campanella,' et interdum alia addentem, et ego attendo nec intelligo quis sit".

[7] See Paracelsus's tract *De Vi imaginativâ* and many other parts of his writings.

[8] Gen. iii. 19.

There remain two doctrines, which refer principally to the faculties of the inferior or sensible soul,—as that which is most connected with the organs of the body; the one concerning Voluntary Motion, the other concerning Sense and the Sensible. In the first of these, which has in other respects also been very barrenly inquired, one entire part almost is wanting. For the proper office and structure of the nerves and muscles, and of the other parts required for this motion; and what part of the body is at rest, while another moves; and that the imagination is as it were the director and driver of this motion, insomuch that when the image which is the object of the motion is withdrawn the motion itself is immediately interrupted and stopped (as in walking, if you begin to think eagerly and fixedly of something else, you immediately stand still); these, I say, and some other subtleties which are not amiss, have long ago come into observation and inquiry. But how the compressions, dilatations, and agitations of the spirit (which is doubtless the source of motion) can sway, excite, or impel the corporeal and gross mass of the parts, has not as yet been diligently inquired and handled. And no wonder; seeing the sensible soul has been regarded rather as a function than as a substance [9]. But since it is now known that it is itself a corporeal and material substance, it is necessary to inquire by what efforts a spirit so small and tender can put in motion bodies so gross and hard. Of this part therefore, since it is deficient, let inquiry be made.

Concerning Sense and the Sensible there has been much fuller and more diligent inquiry, both in general treatises concerning them and also in particular arts, as perspective and music; how correctly, is nothing to the purpose, seeing they cannot be ranked as deficients. Yet there are two noble and distinguished parts, which I pronounce deficient in this doctrine; the one concerning the Difference of Perception and Sense, the other concerning the Form of Light.

A good explanation of the difference between Perception and Sense should have been prefixed by philosophers to their treatises on Sense and the Sensible, as a matter most fundamental. For we see that all natural bodies have a manifest power of perception, and also a kind of choice in receiving what is agreeable, and avoiding what is hostile and foreign. Nor am I speaking only of the more subtle perceptions, as when the magnet attracts iron, flame leaps towards naphtha, one bubble coming near another unites with it, rays of light start away from a white object, the body of an animal assimilates things that are useful and excerns things that are not so, part of a sponge attracts water (though held too high to touch it) and expels air, and the like. For what need is there of enumerating such things? since no body when placed near another either changes it or is changed by it, unless a reciprocal *perception* precede the operation. A body perceives the passages by which it enters; it perceives the force of another body to which it yields; it perceives the removal of another body which held it fast, when it recovers itself; it perceives the disruption of its continuity, which for a time it resists; in short there is Perception everywhere. And air perceives heat and cold so acutely, that its perception is far more subtle than that of the human touch, which yet is reputed the normal measure of heat and cold. It seems then that in regard to this doctrine men have committed two

[9] In the school philosophy, at least among the Realists, every substantial form (and the soul among the rest) was regarded as a *substance*. This of course implies the possibility of its independent existence, though, as form and matter are correlatives, it is difficult to understand how either can exist apart from the other. This difficulty however seems to have been completely surmounted or set aside; and thus, for instance, St. Thomas Aquinas affirms that angels are immaterial forms (*Sum. Theol.* i. 61). Bacon's remark that the soul had hitherto been looked on rather as a function than a substance refers, I think, to Melancthon's exposition of the Aristotelian doctrine. For Melancthon, whose views of the Peripatetic philosophy had long great influence in the Protestant universities, affirms that, according to the true view of Aristotle's opinion, the soul is not a substance but an ἐντελέχεια or functio. The word ἐντελέχεια he conceives to be only a modification of ἐνδελέχεια, which he proposes to render "habitualis agitatio seu δύναμις quædam ciens actiones." See his *De Animâ*, c. 15.

faults; one, that they have for the most part left it untouched and unhandled (though it be a most noble subject); the other, that they who have happened to turn their minds to it have gone too far, and attributed *sense* to all bodies; so that it were a kind of impiety to pluck off the branch of a tree, lest it should groan, like Polydorus [10]. But they should have examined the difference between perception and sense, not only in sensible as compared with insensible bodies (as plants with animals), one body with another; but also in the sensible body itself they should have observed what is the reason why so many actions are performed without any sense at all; why food is digested and ejected; humours and juices carried up and down; the heart and the pulse beat; the entrails, like so many workshops, perform every one its own work; and yet all these and many other things are done without sense. But men have not seen clearly enough of what nature the action of sense is; and what kind of body, what length of time, or what repetition of impression is required to produce pleasure or pain. In a word, they do not seem at all to understand the difference between simple perception and sense; nor how far perception may take place without sense. Neither is this a dispute about words merely, but about a matter of great importance. Concerning this doctrine then (being of great use and bearing upon very many things) let a better inquiry be set on foot. For ignorance on this point drove some of the ancient philosophers to suppose that a soul was infused into all bodies without distinction; for they could not conceive how there could be motion at discretion without sense, or sense without a soul [11].

That no due investigation has been made concerning the Form of Light (especially as men have taken great pains about perspective) may be considered an astonishing piece of negligence. For neither in perspective nor otherwise has any inquiry been made about Light which is of any value. The radiations of it are handled, not the origins. But it is the placing of perspective among the mathematics that has caused this defect, and others of the kind; for thus a premature departure has been made from Physics. Again the manner in which Light and its causes are handled in Physics is somewhat superstitious, as if it were a thing half way between things divine and things natural; insomuch that some of the Platonists have made it older than matter itself; asserting upon a most vain notion that when space was spread forth it was filled first with light, and afterwards with body; whereas the Holy Scriptures distinctly state that there was a dark mass of heaven and earth before light was created [12]. And where the subject is handled physically and according to sense, it comes at once to questions of radiations; so that there is but little physical inquiry extant on the matter. Now men ought to have sunk their speculations for awhile, and inquired what that is which is common to all lucid bodies; in other words, into the Form of Light. For see what an immense difference of body

[10] Virg. *Æn.* iii. 39.

[11] There is a remarkable similarity between the view which Bacon here maintains and that which we find in several passages in the writings of Leibnitz. See his *Monadologie*, §§ 14 and 19, or his *Principes de la Nature et de la Grace*, § 4. The distinction between perceptio and sensus corresponds in Leibnitz's language to that between perception and apperception, a distinction on which the classification of the different orders of monads essentially depends. It is not probable that Bacon was acquainted with the most celebrated treatise on the doctrine of universally diffused sensation, namely the *De Sensu Rerum* of Campanella, as it was not published much before the appearance of the *De Augmentis*; but the same doctrine had, as Brucker remarks, been taught, though not in so formal a manner, by Telesius, with whose works Bacon was as we know familiar; and it may in truth be traced in the writings of Giordano Bruno, of Cæsalpinus, and of Gilbert, and probably in those of many of their contemporaries. See, for Leibnitz's remarks as to the origin of this doctrine, his letter to Thomasius, referred to in the note at p. 31.

[12] Bacon appears to refer to the visionary opinions of Fludd. See the first part of Fludd's great work referred to in the note at p. 445. The process of creation is illustrated by some curious engravings. There is an account of Fludd's views on this and other subjects in Tennemann's *History of Philosophy*, ix. p. 218.

there is (if they be considered according to their dignity) between the sun and rotten wood, or even the putrified scales of fish? They should also have inquired why some things take fire and throw out light when heated, and others not. Iron, metals, stones, glass, wood, oil, tallow, when they are subjected to fire, either break into flame, or at least become red; but water and air do not acquire any light from the most intense and raging heat, nor cast forth any brightness. And if any one thinks that this is because it is the property of fire to shine, and air and water are entirely hostile to fire, he can never have rowed on the sea on a dark night in hot weather; when he would have seen the drops of water that are struck up by the oars glittering and shining: a thing which happens likewise in the boiling sea-froth, which they call "sea-lungs" [13]. Lastly what connexion with fire and lighted matter have glowworms and fireflies, and the Indian fly, which lights up a whole room; or the eyes of some animals in the dark; or sugar while it is being scraped or broken; or the sweat of a horse, hard-ridden on a hot night; and the like? Nay, so little is this subject understood, that most people think sparks from flint to be but air in friction. And yet since the air does not take fire with heat, and manifestly conceives light, how happens it that owls and cats and some other animals can see by night? It must needs be (since sight cannot pass without light) that the air has some pure and natural light of its own [14], which, though very faint and dull, is nevertheless suited to the visual organs of such animals, and enables them to see. But the reason of this error (as of most others) is that men have not from particular instances elicited the Common Forms of natures; which I have laid down as the proper subject of Metaphysic, which is itself a part of Physic, or of the doctrine concerning nature. Wherefore let inquiry be made of the Form and Origins of Light, and in the meantime let it be set down as deficient. And so much for the doctrine concerning the substance of the soul both rational and sensible, with its faculties; and for the appendices of that doctrine.

[13] See note on *Nov. Org.* ii. 12, p. 312.

[14] A doctrine of Telesius. See note p. 662.

Book V.

CHAPTER I.

Division of the Doctrine concerning the Use and Objects of the Faculties of the Human Soul into Logic *and* Ethic. *Division of Logic into the Arts of* Discovering, *of* Judging, *of* Retaining, *and of* Transmitting.

THE doctrine concerning the Intellect (most excellent King), and the doctrine concerning the Will of man, are as it were twins by birth. For purity of illumination and freedom of will began and fell together [1]; and nowhere in the universal nature of things is there so intimate a sympathy as between truth and goodness. The more should learned men be ashamed, if in knowledge they be as the winged angels, but in their desires as crawling serpents; carrying about with them minds like a mirror indeed, but a mirror polluted and false [2].

I come now to the knowledge which respects the use and objects of the faculties of the human soul. It has two parts, and those well known and by general agreement admitted; namely, Logic and Ethic; only Civil Knowledge, which is commonly ranked as a part of Ethic, I have already emancipated and erected into an entire doctrine by itself,—the doctrine concerning man congregate, or in society; and in this place I treat only of man segregate. Logic discourses of the Understanding and Reason; Ethic of the Will, Appetite, and Affections: the one produces determinations, the other actions. It is true indeed that the imagination performs the office of an agent or messenger or proctor in both provinces, both the judicial and the ministerial. For sense sends all kinds of images over to imagination for reason to judge of; and reason again when it has made its judgment and selection, sends them over to imagination before the decree be put in execution. For voluntary motion is ever preceded and incited by imagination; so that imagination is as a common instrument to both,—both reason and will; saving that this Janus of imagination has two different faces; for the face towards reason has the print of truth, and the face towards action has the print of goodness; which nevertheless are faces

quales decet esse sororum [3].

Neither is the imagination simply and only a messenger; but it is either invested with or usurps no small authority in itself, besides the simple duty of the message. For it was well said by Aristotle, "That the mind has over the body that commandment which the lord has over a bondman; but that reason has over the imagination that commandment which a magistrate has over a free citizen" [4], who may come also to rule in his turn. For we see that in matters of faith and religion our imagination raises itself above our reason; not that divine illumination resides in the imagination; its seat being rather in the very citadel of the mind and understanding; but that the divine grace uses the motions of the imagination as an instrument of illumination, just as it uses the motions of the will as an instrument of virtue; which is the reason why religion ever sought access to the mind by similitudes, types, parables, visions, dreams. And again it is no

[1] Namely at the fall; as St. Thomas Aquinas observes: "Homo peccando liberum arbitrium dicitur perdidisse, non quantum ad libertatem naturalem quæ est a coactione, sed quantum ad libertatem quæ est a culpâ et miseriâ".—*Sum. Theol.* i. 83, 2.

[2] Orig. *menstruati*. For an account of the notion on which this use of the word menstruatus is founded, see Aristotle *De Insomniis*, 2. 8., or Pliny [vii. 13].

[3] Ov. *Met.* ii. 14:—Such as sisters' faces should be.

[4] Arist. *Pol.* i. 3.

small dominion which imagination holds in persuasions that are wrought by eloquence; for when by arts of speech men's minds are soothed, inflamed, and carried hither and thither, it is all done by stimulating the imagination till it becomes ungovernable, and not only sets reason at nought, but offers violence to it, partly by blinding, partly by incensing it. Nevertheless, I see no cause to alter the former division; for imagination hardly produces sciences; poesy (which in the beginning was referred to imagination) being to be accounted rather as a pleasure or play of wit than a science. And for the power of the imagination in nature, I have just now assigned it to the doctrine concerning the soul. And its relation to rhetoric I think best to refer to that art itself, which I shall handle hereafter.

That part of human philosophy which regards Logic is less delightful to the taste and palate of most minds, and seems but a net of subtlety and spinosity. For as it is truly said that "knowledge is the food of the mind" [5], so in their choice and appetite for this food most men are of the taste and stomach of the Israelites in the desert, that would fain have returned to the flesh-pots, and were weary of manna; which though it were celestial, yet seemed less nutritive and comfortable. And in like manner those sciences are (for the most part) best liked which have some infusion of flesh and blood; such as civil history, morality, policy, about which men's affections, praises, fortunes, turn and are occupied. But this same "dry light" parches and offends most men's soft and watery natures. But to speak truly of things as they are in worth, rational knowledges are the keys of all other arts. And as the hand is the instrument of instruments, and mind is the form of forms, so these are truly said to be the arts of arts [6]. Neither do they only direct, but likewise confirm and strengthen; even as the habit of shooting not only enables one to take a better aim, but also to draw a stronger bow.

The logical arts are four in number; divided according to the ends at which they aim. For men's labour in rational knowledges is either to invent that which is sought, or to judge that which is invented, or to retain that which is judged, or to deliver over that which is retained. So therefore the Rational 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 [7]. Of these I will now speak separately.

CHAPTER II.

Division of the Art of Discovery into discovery of Arts *and discovery of* Arguments: *and that the former of these (which is the most important) is wanting. Division of the Art of Discovery of Arts into* Learned Experience *and the* New Organon. *Description of* Learned Experience.

INVENTION is of two kinds, very different; the one of arts and sciences, and the other of speech and arguments. The former of these I report altogether deficient, which seems to me to be such a deficience, as if in the making of an inventory touching the estate of a deceased person, it should be set down that "there is no ready money". For as money will fetch all other commodities, so by this art all the rest are obtained. And as the West Indies would never have been discovered if the use of the mariner's needle had not been discovered first, though the one be vast regions and the other a small motion; so it cannot be found strange if no further progress has been made in the discovery and advancement of the arts, when the art itself of discovery and invention has as yet been passed over.

[5] Mr. Markby, in his edition of the *Advancement of Learning*, refers to Cicero, *Acad. Qu.* ii. 41.: "Est enim animorum ingeniorumque naturale quoddam quasi pabulum consideratio contemplatioque naturæ".—*J. S.*

[6] That the hand is the instrument of instruments, and the soul the form of forms, is said by Aristotle. See the *De Animâ*, iii. 8.

[7] These divisions are adopted from Peter Ramus; the artes logicæ including what Ramus calls Dialectic and Rhetoric, of which the former is divided into Inventio and Judicium, and the latter into Elocutio and Pronunciatio.

That this part of knowledge is wanting stands plainly confessed. For in the first place, Logic says nothing, no nor takes any thought, about the invention of arts, whether mechanical or what are termed liberal, or about eliciting the works of the one or the axioms of the other; but passes on, merely telling men by the way that for the principles of each art they must consult the professor of it [1]. Celsus, a wise man as well as a physician, (though all men are wont to be large in praise of their own art) acknowledges gravely and ingenuously, speaking of the empirical and dogmatical sects of physicians, that medicines and cures were first found out, and then afterwards the reasons and causes were discovered; and not the causes first found out from the nature of things, and by light from them the medicines and cures discovered [2]. And Plato more than once intimates "that particulars are infinite; and the higher generalities give no sufficient direction; that the pith therefore of all sciences, which makes the artsman differ from the inexpert, is in the middle propositions, which in every particular knowledge are taken from tradition and experience" [3]. Moreover they who have written about the first inventors of things or the origins of sciences have celebrated chance rather than art, and represented brute beasts, quadrupeds, birds, fishes, serpents, as the doctors of sciences, rather than men:

> Dictamnum genitrix Cretæa carpit ab Ida,
> Puberibus caulem foliis, et flore comantem
> Purpureo: non illa feris incognita capris
> Gramina, cum tergo volucres hæsere sagittæ [4].

So that it is no marvel (the manner of antiquity being to consecrate inventors of useful things) that the ancient Egyptians (to whom very many of the arts owe their origin) had so few human idols in their temples, but almost all brute;

> Omnigenumque Deum monstra, et latrator Anubis,
> Contra Neptunum, et Venerem, contraque Minervam, etc.[5].

And if you like better, according to the tradition of the Greeks, to ascribe the first inventions to men; yet you would not say that Prometheus was led by speculation to the discovery of fire, or that when he first struck the flint he expected the spark; but rather that he lighted on it by accident, and (as they say) stole it from Jupiter. So that in the invention of arts it would seem that hitherto men are rather beholden to a wild goat for surgery, to a nightingale for music, to the ibis for clysters [6], to the pot lid that flew open for artillery, and in a word to

[1] See Aristotle, *Prior Analytics*, i. 30.

[2] See *Nov. Org.* i. 73. This is not what Celsus himself confesses in the passage to which Bacon apparently refers, but what he represents the Empirics as urging against the Rationalists.—*J. S.*

[3] See note above p. 360.

[4] Virg. *Æn.* xii. 412:—

> Far off in Cretan Ide a plant there grew
> With downy leaves and flower of purple hue,
> The dittany, whose medicinable power
> The wild goat proves whene'er in evil hour
> The hunter's arrow lodges in his side.

[5] Virg. *Æn.* viii. 698:—

> All kinds and shapes of gods, a monstrous host,
> The dog Anubis foremost, stood arrayed
> 'Gainst Neptune, Venus, Pallas, etc.

[6] See Plutarch, *De Solertiâ Animalium*, or *De Iside*. Compare Pliny. The story of the accidental invention of gunpowder by Schwartz is well known. So too is it said that the Jesuit's bark was discovered by the lions who cured their fevers by drinking the water into which it had fallen. It is obvious that all stories of this kind are more or less mythical. The subject has been systematically discussed by Virey. (*Journal de Pharmacie*, 1818.)

chance, or anything else, rather than to Logic. Neither is that form of invention much other which is well described by Virgil,

> Ut varias usus meditando extunderet artes
> Paulatim [7].

For here no other method of invention is proposed than that which the brute beasts are capable of and frequently use; which is an extreme solicitude about some one thing, and perpetual practising of it, such as the necessity of self-preservation imposes on such animals. For so Cicero says very truly, "that practice constantly applied to one thing often does more than either nature or art." [8] And therefore if it be said of men,

> Labor omnia vincit
> Improbus, et duris urgens in rebus egestas [9];

it is likewise said of brutes,

> Quis expedivit psittaco suum χαῖρε [10]?

Who taught the raven in a drought to throw pebbles into a hollow tree where she espied water, that the water might rise till she could reach it with her beak? Who showed the way to the bees, that sail through such a vast sea of air to fields in flower far removed from their hive, and back again [11]? Who taught the ant to bite the grains of corn that she lays up in her hill, lest they should sprout and so disappoint her hope [12]? And in that line of Virgil, if the word "extundere," which imports the difficulty, and the word "paulatim," which imports the slowness of the thing, be observed, we shall find ourselves where we were, amongst those gods of the Egyptians; for men have hitherto used the faculty of reason but little, and the office of art not at all, for the discovery of inventions.

Secondly, this very thing which I assert is demonstrated (if you observe it

[7] Virg. *Georg.* i. 133:—

> So might long use, with studious thought combined,
> The various arts by slow endeavour find.

[8] Cicero, *Pro Balbo*, c. 20.

[9] Virg. *Georg.* i. 145:—

> Stern labour masters all,
> And want in poverty importunate.

[10] Persius, *Prolog.*:—Who taught the parrot to say how d'ye do?

[11] Much more remarkable than the return of the bees to their hive is the appearance of mathematical knowledge shown in the construction of their cells. In every case of instinct, the impulse in obedience to which the instinctive act is performed is a matter at the nature of which we can only guess; but the case just mentioned has a difficulty of its own. The bees may be supposed to know when they have reached their hive; but how do they perceive that the cell has acquired its just proportions? Several attempts have been made to explain away this especial difficulty; but those which I am acquainted with appear to be quite unsatisfactory. It is worthy of remark that the degree of accuracy with which the cells are constructed has been exaggerated; one writer after another having repeated, on the supposed authority of Maraldi, what Maraldi never said. According to his observations the angles of the terminal rhomb are about 108° and 72°. He does not attempt to determine them more precisely, although he has generally been supposed to do so. It has been recently stated that the mathematical problem which the cells of bees suggest was first correctly solved by Lord Brougham in the notes to his edition of Paley's *Natural Theology*; but this statement is, it need scarcely be said, erroneous. [The problem has been cleared up by Darwin, *Origin of Species*, ch. viii.—Ed.]

[12] This statement is probably taken from Plutarch, *De Solertiâ Animalium*. The supposed grains of corn are no doubt the nymphæ. Huber repeatedly observed ants in the act of tearing the integument in which the young ant was enclosed, in order to facilitate its exit. This practice is, it may be presumed, the origin of the notion mentioned in the text.

carefully) by the form of induction which Logic proposes, as that whereby the principles of sciences may be invented and proved ; which form is utterly vicious and incompetent, and so far from perfecting nature, that contrariwise it perverts and distorts her. For he that shall attentively observe how the mind gathers this excellent dew of knowledge, like to that the poet speaks of,

aërei mellis cœlestia dona [13],

(for the sciences themselves are extracted out of particular instances, partly natural, partly artificial, as the flowers of the field and the garden) shall find that the mind does of herself by nature manage and act an induction much better than logicians describe it ; for to conclude upon a bare enumeration of particulars (as the logicians do) without instance contradictory, is a vicious conclusion ; nor does this kind of induction produce more than a probable conjecture. For who can assure himself, when the particulars which he knows or remembers only appear on one side, that there are not others on the contrary side which appear not ? As if Samuel should have rested upon those sons of Jesse who were brought before him in the house, and not sought for David, who was in the field [14]. And this form of induction (to say truth) is so gross and stupid, that it had not been possible for wits so acute and subtle as those that have studied these things to offer it to the world, but that they were hurrying on to their theories and dogmaticals, and were too dainty and lofty to pay due attention to particulars, and especially to dwell any time upon them. For they used examples or particular instances but as serjeants or whifflers to drive back the crowd and make way for their opinions, and never called them into council from the first, for the purpose of legitimate and mature deliberation concerning the truth of things. Certainly it is a thing that 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 the perception of divine truth man cannot induce himself to become as a child ; so in the study of human truth, for grown-up men to be still reading and conning over the first elements of inductions like boys, is accounted poor and contemptible.

Thirdly, even if it be granted that the principles of sciences may, by the induction which is in use, or by sense and experience, be rightly established ; yet it is very certain that the lower axioms cannot (in things natural, which participate of matter) be rightly and safely deduced from them by syllogism. For in the syllogism propositions are reduced to principles through intermediate propositions. Now this form of invention, or of probation may be used in popular sciences, such as ethics, politics, laws, and the like ; yea, and in divinity also, because it has pleased God of his goodness to accommodate himself to the capacity of man ; but in Physics, where the point is not to master an adversary in argument, but to command nature in operation, truth slips wholly out of our hands, because the subtlety of nature is so much greater than the subtlety of words ; so that, syllogism failing, the aid of induction (I mean the true and reformed induction) is wanted everywhere, as well for the more general principles as for intermediate propositions. For syllogisms consist of propositions, and propositions of words ; and words are but the current tokens or marks of popular notions of things ; wherefore if these notions (which are the souls of words) be grossly and variably collected out of particulars, the whole structure falls to pieces [15]. And it is not the laborious examination either of consequences of arguments or of the truth of propositions that can ever correct that error ; being

[13] Virg. *Georg.* iv. 1 :—The heavenly gift of aërial honey.

[14] 1 Sam. xvi.

[15] Compare *Novum Organum*, i. 13. and 14. The formation of abstract conceptions is one of the objects of Bacon's inductive method, as well as the establishment of axioms. See Gen. Pref. p. 23. It is difficult to understand how the subtlety of language and the subtlety of natural operations can be compared. Bacon must be understood to mean that scientific terms and the conceptions which they express are not an adequate representation of the natural phenomena which have led to their formation.

(as the physicians say) in the first digestion ; which is not to be rectified by the subsequent functions. And therefore it was not without great and evident reason that so many philosophers (some of them most eminent) became Sceptics and Academics, and denied any certainty of knowledge or comprehension ; affirming that the knowledge of man extended only to appearances and probabilities. It is true that Socrates, when he disclaimed certainty of knowledge for himself is thought by some to have done it only in irony[16], and to have enhanced his knowledge by dissembling it ; pretending not to know that which it was plain he knew in order that he might be thought to know also that which he knew not. And in the later academy too (which Cicero embraced) that opinion of the incapacity of the mind to comprehend truth was not held very sincerely. For those who excelled in eloquence commonly chose that sect, for the glory of speaking copiously on either side of the question ; whereby they were led astray from the straight road, which they ought to have followed in pursuit of truth, into certain pleasant walks laid out for amusement and recreation. It is certain however that there were some here and there in both academies (both old and new) and much more among the Sceptics, who held this opinion in simplicity and integrity. But their great error was, that they laid the blame upon the perceptions of the sense, and thereby pulled up the sciences by the very roots. Now the senses, though they often deceive us or fail us, may nevertheless, with diligent assistance, suffice for knowledge ; and that by the help not so much of instruments (though these too are of some use) as of those experiments which produce and urge things which are too subtle for the sense to some effect comprehensible by the sense. But they ought rather to have charged the defect upon the mind—as well its contumacy (whereby it refuses to submit itself to the nature of things) as its errors,—and upon false forms of demonstration, and ill-ordered methods of reasoning and concluding upon the perception of the senses. But this I say not to disable the intellect, or to urge the abandonment of the enterprise ; but to stir men to provide the intellect with proper helps for overcoming the difficulties and obscurities of nature. For no steadiness of hand or amount of practice will enable a man to draw a straight line or perfect circle by hand alone, which is easily done by help of a ruler or compass. And this is the very thing which I am preparing and labouring at with all my might,—to make the mind of man by help of art a match for the nature of things ; to discover an art of Indication and Direction, whereby all other arts with their axioms and works may be detected and brought to light. For this I have with good reason set down as wanting.

This Art of Indication (for so I call it) has two parts. For the indication either proceeds from one experiment to another ; or else from experiments to axioms ; which axioms themselves suggest new experiments. The one of these I will term Learned Experience[17], the other Interpretation of Nature, or the New Organon.

[16] Cicero, *Acad. Quæst.* ii. 5. 15.—*J. S.*

[17] With reference to the question how far Bacon thought it possible for observation to be carried on apart from theory (see General Preface, p. 35), it is, I think, important to remark that this notion of an Experientia *Literata*, as an intermediate step between simple experimentation *absque ullâ serie aut methodo* and the Interpretation of Nature, was not an after-thought, but formed part of his original design in the earliest shape in which it is known to us. "This part of Invention (he says in the *Advancement of Learning*) 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 or rudiment of the latter.*" Now if he meant by "Experientia literata" the same thing which he describes here, or anything like it,—which I see no reason to doubt—he must have seen even then the impossibility of making a collection of facts sufficient for the purposes of Interpretation without the help of some principle of arrangement, some "series et methodus", some "sagacitas" in seeking and selecting ; which necessarily implied some amount of *theory*. Such theory was indeed to be provisional only, and subject at all times to revision. It was not to be allowed as an axiom. But it does not appear that he would have put any other restriction upon the exercise of human sagacity in this way. The process might have been carried therefore to an indefinite length, and the further the better.

But the former (as I have hinted elsewhere [18]) must hardly be esteemed an art or a part of philosophy, but rather a kind of sagacity ; whence likewise (borrowing the name from the fable) I sometimes call it the Hunt of Pan. Nevertheless as a man may proceed on his path in three ways : he may grope his way for himself in the dark ; he way be led by the hand of another, without himself seeing anything ; or lastly, he may get a light, and so direct his steps ; in like manner when a man tries all kinds of experiments without order or method, this is but groping in the dark ; but when he uses some direction and order in experimenting, it is as if he were led by the hand ; and this is what I mean by Learned Experience For the light itself, which was the third way, is to be sought from the Interpretation of Nature, or the New Organon.

Learned Experience, or the Hunt of Pan, treats of the methods of experimenting ; and (since I have set it down as wanting, and the thing itself is not altogether obvious) I will here, according to my plan and custom, give some shadow of it. The method of experimenting proceeds principally either by the Variation, or the Production, or the Translation, or the Inversion, or the Compulsion, or the Application, or the Conjunction, or finally the Chances, of experiment. None of these however extend so far as to the invention of any axiom. For all transition from experiments to axioms, or from axioms to experiments, belongs to that other part, relating to the New Organon.

Variation of experiment takes place first in the Matter; that is, when in things already known an experiment has scarcely been tried except in a certain kind of matter, but now is tried in other things of a like kind ; as the manufacture of paper has been only tried in linen, not in silks (except perhaps among the Chinese) nor yet in hair stuffs, from which what are called chamblets are made ; nor in wools, cotton [19], and skins ; though these three last seem to be more heterogeneous, so that they may be more useful if mixed together than separate. Grafting again is common in fruit trees, but has been seldom tried on wild trees ; though it is said that the elm when grafted on the elm produces a wonderful foliage. Grafting in flowers is likewise very rare, though now it is sometimes done in musk-roses, which are successfully inoculated with the common roses. Variation in the part of a thing I likewise set down among variations in matter. For we see that a sucker grafted on the trunk of a tree grows better than if planted in the ground. Why then should not the seed of an onion, inserted into the head of another onion when green, grow better than if sown by itself in the ground? Here the root is substituted for the trunk, so that this may be regarded as a kind of grafting in the root. Variation of experiment takes place secondly in the efficient. The rays of the sun are so intensified in heat by burning-glasses, that they can set on fire any combustible matter ; can the rays of the moon by the

And though it may be true that no amount of diligence and sagacity could ever have made a collection of facts complete *enough* to lead to the discovery of Forms by the method of the *Novum Organum*, it seems impossible to fix a point beyond which, through successive reductions of particular phenomena and groups of phenomena under laws more and more general, further progress could not have been made towards the highest law which includes them all. And such progress men have in fact been making ever since Bacon's time ; the whole of our experimental philosophy being what he, I think, would have described as *Experientia literata*, and allowed as legitimate and successful—so far as it goes. Whether, if he could see the results which it has produced during the last two hundred years, he would still believe in the possibility of arriving ultimately at what he would have called " the *Interpretation of Nature*", may be doubted ; but that if this " hunt of Pan " were conducted as skilfully and assiduously by the whole body of inquirers through the entire field of nature as it has been by particular inquirers in particular fields, we should be able to approach much nearer to such a consummation than anybody now imagines—this I cannot doubt that he would still believe.—*J. S.*

[18] *Nov. Org.* i. 100.

[19] Cotton paper was known long before that made from rags. It seems probable that the art of making paper came to the west of Europe from Constantinople, and that our word quire, of which the equivalent in Low Latin is manus, is a token of its Greek origin, and means properly a handful of paper.

same process be actuated to any degree of heat however mild ? that we may see whether all heavenly bodies have the power of heating. So again, radiant heats are increased by glasses ; can the same effect be produced on opaque heats (as of stones and metals, before they are red-hot) or has light something to do with it [20] ? So again amber and jet when rubbed attract straws ; will they do the same when warmed by fire ? Variation of experiment takes place thirdly in Quantity ; which must be treated with great care, as it is surrounded by many errors. For men believe that if the quantity be increased or multiplied, the power and virtue is increased or multiplied proportionately. And this they postulate and suppose as if it had a kind of mathematical certainty ; which is utterly false. A leaden ball of a pound weight dropped from a tower reaches the ground in (say) ten seconds : will a ball of two pounds weight (in which the force of natural motion, as they call it, ought to be doubled) reach the ground in five seconds ? No, but it will take almost the same time in falling, and will not be accelerated in proportion to the increase of quantity [21]. Again, suppose one drachm of sulphur mixed with half a pound of steel will melt it and make it liquid ; will therefore one ounce of sulphur mixed with four pounds of steel be able to melt it ? This does not follow ; for it is certain that the obstinacy of matter in the patient is more increased by quantity than the active power of the agent. Besides, both overmuch and overlittle equally prejudice the effect. For in the smelting and refining of metals it is a common error to suppose that in order to advance the smelting either the heat of the fire or the quantity of the added ingredient should be increased ; whereas, if these surpass the due proportion, they retard the operation ; because by their power and acrimony they turn much of the pure metal into fumes, and carry it off, so as both to cause a loss of metal and to make the remaining mass more hard and intractable. Men should therefore consider the story of the woman in Æsop, who expected that with a double measure of barley her hen would lay two eggs a day ; whereas the hen grew fat and laid none. As a rule, then, it will not be safe to rely on any experiment in nature, unless it has been tried both in greater and lesser quantities. And so much for Variation of Experiment.

Production of experiment is of two kinds ; repetition and extension ; that is, when the experiment is either repeated, or urged to some effect more subtle. As an instance of repetition : spirit of wine is made from wine by a simple distillation, and is much more pungent and stronger than wine itself ; will then spirit of wine, if it be itself distilled and clarified, proportionately exceed itself in strength ? But repetition also is not free from fallacy. For in the second exaltation the difference is not so great as in the first ; and besides, by the repetition of an experiment, after the operation has reached a certain standing point or *acme*, nature oftentimes is so far from advancing that she rather inclines to relapse. Judgment therefore is to be exercised in this matter. Again, quicksilver put into linen or into the middle of molten lead when it is beginning to cool again,

[20] The researches which Bacon here suggests, in which obscure radiant heat is dealt with in the same manner as luminous heat, have been recently carried on with great success, and have led to many interesting results. The question as to the nature of the essential or formal connexion between heat and light remains however as yet unanswered, though it may be hoped that it will shortly be satisfactorily solved.

Telesius, of whom more than of any one else Bacon was a follower, maintained that heat and light were " contubernales naturæ", and that where one was present the other must be present too. Bacon, with a more subtle insight into nature, proposed to trace the analogy which might exist between them in cases where, sensibly at least, the dogma of Telesius seemed unfounded.

[21] Long before the publication of the *De Augmentis*, the theory of the acceleration of falling bodies, which of course includes the fact that all bodies fall from rest with equal velocities (the resistance of the air being set aside), had been made known by Galileo. The experiments which he made about the year 1590 to show the absurdity of the received opinion that the velocity of falling increases as the mass of the falling body, led to his leaving Pisa, where he had made them, and where he had in consequence been involved in disputes with the adherents of the Peripatetic philosophy.

becomes solid, and is no longer fluid; will therefore this same quicksilver, by many repetitions of the operation, become fixed and malleable? As an example of extension; if water be put into a glass with a long neb and hung up, and then the neb be dipped into a mixture of wine and water underneath, it will separate the water from the wine, the wine gradually rising to the top, the water sinking to the bottom [22]; will it likewise happen that as wine and water (being different bodies) are by this device separated, so the finer parts of wine (being of the same body) may be separated from the more gross; so that there shall take place a kind of distillation by gravity, and a substance shall be found on the top much like spirits of wine, but perhaps more delicate? Again, a magnet attracts a solid piece of iron; will a piece of a magnet dipped in a dissolution of iron, attract the iron itself and so get a coating of iron? Again, the magnetic needle turns to the pole; does it in so doing follow the same course as the heavenly bodies? As if one should turn the needle the wrong way, that is point it to the south, and hold it there for a while, and then let it go; would it, in returning to the north, go round by the west rather than by the east? Again, gold imbibes quicksilver when contiguous to it; does it receive this quicksilver into itself without extending its bulk, and so become a body heavier than gold itself? Again, men help the memory by putting images of persons in places; could the same thing be done without the places, by connecting actions or habits with persons? And so much for the Production of Experiment.

Translation of experiment is of three kinds: either from nature or chance into an art; or from one art or practice into another; or from a part of one art into a different part of the same. Of translation from nature or chance into an art there are innumerable examples; for almost all mechanical arts have sprung from small beginnings presented by nature or chance. It was received as an adage "that one cluster of grapes ripens faster by the side of another;" [23] which has grown into a common saying, as applied to the mutual services and offices of friendship. But our cyder makers have an excellent way of imitating the operation. For they take care not to bruise or squeeze the apples till they have lain together for awhile in heaps, and so ripened by mutual contact; that the too great acidity of the drink may be corrected. Again, the artificial imitation of rainbows, with drops thickly sprinkled, is translated by an easy passage from natural rainbows formed by a dripping cloud. Again, the method of distilling may have been drawn either from above, that is, from showers and dew; or from that homely experiment of drops adhering to the lids of pans of boiling water. Nor would a man have ventured to imitate thunder and lightning, if it had not been suggested by the pot lid of the monkish chemist suddenly flying up with great force and a loud report. The more plentiful the examples however, the fewer need be adduced. But if men were at leisure to inquire after useful things, they ought to observe attentively and minutely and systematically all natural works and operations, and be ever eagerly considering which of them may be transferred to the arts. For nature is the mirror of art. Nor are the experiments

[22] This experiment is more minutely described in the *Sylva Sylvarum*, i. 14. The water in the inverted glass or phial is maintained by the pressure of the atmosphere at a higher level than that of the wine and water into which the neck of the vessel containing it is inserted, but as the density of the water is greater than that of the diluted wine, it is in a position of unstable equilibrium. But for friction etc. the equilibrium could not practically exist at all; and after a little while it ceases to do so, the water gradually subsiding to the bottom and forcing the wine and water or some part of it into the vessel, which originally contained only water. The water for a considerable time passes without mixing through the wine and water; but of course there is no separation between the wine and the portion of water with which it was originally mixed, and the experiment succeeds just as well with pure as with diluted wine.

[23] This proverb Bacon doubtless took from Erasmus's collection. The *Promus* contains nearly 200 Latin proverbs (and this among the number) all of which are given by Erasmus. In more than one instance errors of Erasmus's are copied in Bacon's extract, so that there can be no doubt as to the source from which he derived them. See for the proverb in the text, Erasm. iii. 2. 49.

fewer in number which may be transferred from one art to another, or from one practice to another; although the thing is not so common. For nature meets everybody everywhere; but particular arts are only known to their own artists. Spectacles have been invented to assist weak sight; might not some instrument be devised, which being applied to the ear would assist those dull of hearing? Dead bodies are preserved by honey and embalming; could not something of the same kind be transferred to medicine for the benefit of live bodies? The practice of sealing upon wax, cements, and lead is of old date; but it led to impressions on paper, or the art of printing. In cookery, salt preserves meat, and that better in winter than summer; might not this be profitably transferred to baths, to regulate their temperament, when necessary, by impression or extraction? So in the late experiment of artificial freezing, salt is discovered to have great powers of condensing [24], may not this be transferred to the condensations of metals? seeing it is already known that strong waters composed of certain salts precipitate small sands of gold from certain metals not so dense as gold itself [25]? So again, painting revives the memory of a thing by the image of it; has not this been transferred into the art which they call the art of memory? Of these things it may be said generally, that the best chance of bringing down as from heaven a shower of inventions at once useful and new, is to bring within the knowledge of one man, or of a few who may sharpen one another by conference, the experiments of a number of mechanical arts; that by this translation (as I call it) of experiments the arts may mutually cherish and as it were kindle one another by mixture of rays. For though the rational method of inquiry by the Organon promises far greater things in the end, yet this sagacity proceeding by Learned Experience will in the meantime present mankind with a number of inventions which lie near at hand, and scatter them like the donatives that used to be thrown among the people [26]. There remains the translation from one part of an art to a different part; which differs little from the translation from one art into another. But as some arts are so extensive that the translation of experiments may take place within them, I have thought it right to annex this kind also; especially as in some arts it is of great importance. For it would tend greatly to the advancement of the art of medicine if the experiments of that part which relates to the cure of diseases were transferred to the parts that are concerned with the preservation of health and the prolongation of life. For if an excellent opiate is able to assuage the raging fever of the spirits in a dangerous disease, it need not be doubted that something of a similar nature, made familiar to the system by well proportioned doses, may likewise in some measure check and retard that continually advancing and creeping fever which is the effect of age. And so much for the Translation of Experiment.

Inversion of Experiment takes place when trial is made of the contrary of that which has been by the experiment proved. For instance, heat is increased by burning-glasses; is cold also [27]? Again, heat spreads round, but with a tendency

[24] Bacon refers to the experiments exhibited by Drebbel in 1620. One of them was of a boat that would go under water. See Nelli's *Life of Galileo*. I have not been able to see the Chronicle of Alkmaar to which Nelli refers. It is said that in presence of James I. Drebbel produced an intolerable degree of cold in Westminster Hall.

[25] The experiment here referred to, which, as Professor Cumming has suggested to me, may not improbably have been an alchemist's trick, is not sufficiently described to make it possible to ascertain its nature. It appears probable, however, that it was based on a reduction of a solution of perchloride of gold in an excess of acid by some other metal. Of all metallic salts the perchloride of gold appears to be one of the most easy to decompose. Its reduction by a metal is employed as a gilding process.

[26] Compare Suetonius in Calig. c. 18.

[27] With Bacon, as with the Peripaticians, cold is not the negation of heat; it is something positive—the opposite of heat, and not merely its absence. Prevost's experiment, in which two concave mirrors are placed opposite to one another with a piece of ice in the focus of the one and a thermometer in that of the other, shows that the effect apparently due to the radiation of cold may be made more intense in the manner which Bacon suggests: the real explanation of the phenomenon of course depends upon the "theory of exchanges".

upwards ; does cold spread round with a tendency downwards ? For example : take an iron rod and heat it at one end ; then raise it, with the heated part downwards and the hand above ; it will burn the hand at once : hold it with the heated part upwards and the hand below, it will be much longer in doing so [28]. But how if the whole bar be heated, and one end touched with snow or with a sponge dipped in cold water ? will the cold travel downwards, if the snow or sponge be applied to the top, faster than upwards if applied to the bottom ? Again, the rays of the sun are reflected from white but collected on black ; are shadows likewise lost on black and collected on white ? As we see in a dark room, where the light is only let in by a little chink, that the images of things outside are received on a white paper, but not on a black. Again, the megrims are relieved by opening a vein in the forehead ; is a pain in the forehead relieved by scarifying the skull ? And so much for the Inversion of Experiment.

Compulsion of Experiment is when an experiment is urged and extended to the annihilation or deprivation of the power ; for in the other hunts the prey is only caught, but in this it is killed. Here is an example of compulsion. The magnet attracts iron ; urge the iron or the magnet till it can attract no longer ; for instance, if the loadstone be burnt, or steeped in aqua fortis, will it lose its power entirely or for a time ? On the other hand, if iron or steel be reduced to oxide of iron, or to what is termed prepared steel, or if it be dissolved in aqua fortis, will it still be attracted by the loadstone ? Again, the magnet attracts iron through all mediums we know of ; as gold, silver, and glass ; find some medium, if it be possible, which will intercept the power ; try quicksilver ; try oil, gums, ignited coal, and other things, hitherto untried. Again, glasses have lately been invented which magnify minute visible objects in a wonderful manner ; urge the use of them to objects either so small as to be beyond their power or so large as to confound it. Thus, can they clearly detect in urine things otherwise imperceptible ? Can they discover specks or flaws in jewels which appear every way clear and bright ? Can they make the motes in the sunbeams (which were objected most unjustly to Democritus as if they were his atoms and principles of things [29]) appear like great bodies ? or a thick powder of vermilion and white lead appear so distinct that the red and the white grains shall be seen separately ? Again, can they magnify larger figures (say a face, or an eye) as much as they can a flea or a mite ? Can they make a piece of cambric, or any of these finer and more open linen textures, appear full of holes, like a net ? But on the compulsions of experiments I dwell the less, because they commonly fall outside the limits of learned experience, and are rather referred to causes, and axioms, and the New Organon. For wherever a case is established of negation, privation, or exclusion, there is some light given towards the invention of Forms. And so much for the Compulsion of Experiment.

Application of Experiment is nothing but the ingenious translation of it to some other useful experiment. For instance ; all bodies have their own dimensions and gravities ; gold has more weight, but less dimension than silver ; water than wine. From this is derived a useful experiment ; for by taking the bulk and the weight you may know how much silver has been mixed with gold, or how much water with wine ; which was the εὕρηκα of Archimedes [30]. Again, flesh

[28] It is obvious that the difference arises simply from the circumstance that the air close to the hot end of the rod rises in the one case to that at which the hand is applied, and in the other case does not do so. In other words, in the first form of the experiment, the effect of conduction is increased by that of convection, and in the second is not.

[29] Democritus maintained the absolute invisibility of his atoms. See Sextus Empiricus, *Adv. Logic.* i. 135 ; ii. 6, and elsewhere.

[30] The εὕρηκα of Archimedes related to the discovery of a method of determining the specific gravity of a body which could not be made "implere mensuram". If he had had a crown of pure gold of the same size and form as the suspected one, he need only have weighed the one against the other ; and if the latter were lighter, the question as to its being alloyed would have been settled. Or if he had been at liberty to melt down a portion of the crown and to run it into a mould in which a piece of pure gold had previously been moulded, he might then have weighed them and determined which was the

putrefies sooner in some cellars than in others; it would therefore be useful to apply this experiment to the discovery of airs more or less healthy to live in; those namely, in which flesh is longest in putrefying. The same method may be applied to discover healthy and unhealthy seasons of the year. But there are innumerable instances of this kind. Let men only watch, and keep their eyes continually turned to the nature of things on one side, and to the uses of man on the other. And so much for the Application of Experiment.

Coupling of Experiment is the link or chain of applications; when things which would be ineffectual singly are effectual in conjunction. For example; you wish to have roses or fruit come late. It will be effected, if you pluck off the earlier buds; it will be effected likewise if you uncover the roots and expose them to the air until the middle of spring; but much more if the two be coupled together. Again, ice and nitre have both of them great power of refrigeration; much more when mixed. This is indeed clear of itself. And yet there may often be a deception in it (as in all things else where axioms are wanting), if the things so coupled be such as operate in different and contrary ways. And so much for Coupling of Experiment.

There remain the Chances of Experiment. This form of experimenting is merely irrational and as it were mad, when you have a mind to try something, not because reason or some other experiment leads you to it, but simply because such a thing has never been attempted before. Yet I know not but in this very process (of which we are now treating) some great thing may be involved; the leaving (I say) of no stone in nature unturned. For the *magnalia* of nature generally lie out of the common roads and beaten paths, so that the very absurdity of the thing may sometimes prove of service. But if reason go along with it; that is, if it be evident that an experiment of this nature has never been tried, and yet there is great reason why it should be tried; then it is one of the best ways, and plainly shakes out the folds of nature. For instance, when fire works upon a natural body, one of two things has hitherto always happened;—either that something flies out (as flame and smoke in common combustion), or at least that there is a local separation of the parts, and to some distance; as in distillation, where the dregs settle at the bottom, and the vapours, after they have had their play, are gathered into receptacles. But of what I may call *close distillation* no man has yet made trial. Yet it seems probable that the force of heat, if it can perform its exploits of alteration within the enclosure of the body, where there is neither loss of the body nor yet means of escape, will succeed at last in handcuffing this Proteus of matter, and driving it to many transformations; only the heat must be so regulated and varied, that there be no fracture of the vessels. For this operation is like that of the womb, where the heat works, and yet no part of the body is either emitted or separated [31]. In the womb indeed alimentation is conjoined; but as far as conversion is concerned it seems to be the same thing. Such then are the chances of Experiment.

Meanwhile I give this advice as to experiments of this nature; that no one should be disheartened or confounded if the experiments which he tries do not answer his expectation. For though a successful experiment be more agreeable, yet an unsuccessful one is oftentimes no less instructive. And it must ever be kept in mind (as I am continually urging) that experiments of Light are even more to be sought after than experiments of Fruit. And so much for learned Experience, which (as I have already said) is rather a sagacity and a kind of hunting by scent, than a science. Of the New Organon I say nothing, nor shall

heaviest. But the problem he had to solve was quite different from this, and required the application of the principles of hydrostatics. Yet both here and in the *Historia Densi et Rari* Bacon refers to the discovery of Archimedes without distinguishing between his own inartificial method of determining specific gravities (which consisted in filling a measure with different substances and then weighing it) and that of Archimedes. Bacon's results are wonderfully accurate (with one remarkable exception), considering the manner in which they were obtained.

[31] This notion is taken from Telesius. See his *De rerum naturâ*, vi. 23.

I give any taste of it here; as I purpose by the divine favour to compose a complete work on that subject,—being the most important thing of all [32].

CHAPTER III.

Division of the art of discovery of Arguments into Promptuary *and* Topics. *Division of Topics into* General *and* Particular. *Example of a Particular Topic in an Inquiry concerning Heavy and Light.*

The invention of arguments is not properly an invention; for to invent is to discover that we know not, not to recover or resummon that which we already know. Now the use and office of this invention is no other than out of the mass of knowledge which is collected and laid up in the mind to draw forth readily that which may be pertinent to the matter or question which is under consideration. For to him who has little or no knowledge on the subject proposed, places of invention are of no service; and on the other hand, he who is ready provided with matter applicable to the point in question will, even without art and places of invention (although perhaps not so expeditiously and easily), discover and produce arguments. So (as I have said) this kind of invention is not properly an invention, but a remembrance or suggestion with an application. Nevertheless, as the name has come into use, let it be called invention; for the hunting of any wild animal may be called a finding of it, as well in an enclosed park as in a forest at large. But not to be nice about words, let it be clearly understood, that the scope and end of this invention is readiness and present use of our knowledge, rather than addition or amplification thereof.

Provision for discourse may be procured in two ways. The place where a thing is to be looked for may be marked, and as it were indexed; and this is that which I call *Topics;* or arguments concerning such matters as commonly fall out and come under discussion may be composed beforehand and laid up for use: and this I will name the *Promptuary*. This last however scarcely deserves to be spoken of as a part of knowledge, consisting rather of diligence than of any artificial erudition. And herein Aristotle wittily, but hurtfully, derides the sophists of his time, saying, "they did as if one that professed the art of shoemaking, should not teach how to make a shoe, but only exhibit a number of shoes of all fashions and sizes" [1]. But here 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 still a poor man, and have few customers. Far otherwise says our Saviour, speaking of divine knowledge: "Every scribe that is instructed in the kingdom of heaven is like a householder, that bringeth forth old and new store [2]". We see likewise that the ancient rhetoricians gave it in precept to pleaders, that they should have by them a variety of commonplaces, ready prepared, and handled and illustrated on both sides; arguments (for example) for the sense of the law against the words of the law; and the contrary: for inferences against testimony, and the contrary. And Cicero himself, taught by long experience, directly asserts that a diligent orator may have by him premeditated and carefully handled beforehand everything which he shall have occasion to speak of; so that in the pleading of any particular cause, he shall not have to introduce anything

[32] It has been inferred from this passage that this part of the *De Augmentis* was written before the publication of the *Novum Organum*. But it must be remembered that the *Novum Organum*, which was published in 1620, was not an *opus integrum*. Writing to Fulgenzio *after* the publication of the *De Augmentis*, Bacon says, "Debuerat sequi Novum Organum; interposui tamen scripta mea moralia et politica, *quia magis erant in promptu*. Hæc sunt, etc. . . . Tum demum sequetur Organum Novum, cui secunda pars adhuc adjicienda est, quam animo jam complexus et metitus sum." Afterwards he seems to have come to the conclusion that a sample of Natural History was more urgently wanted, and therefore postponed the completion of the *Novum Organum* until he had finished the *Sylva Sylvarum*, which, according to Dr. Rawley, was his last work; and it does not appear that any portion of the second part was ever written.—*J. S.*

[1] Arist. *De Repreh. Sophist.* ii. 9.

[2] St. Matt. xiii. 52.

new or on the sudden, except names and some special circumstances [3]. But such was the diligence and exactness of Demosthenes, that seeing what great force the entrance and access into a cause has to make a good impression on the minds of the audience, he thought it worth while to compose and have ready by him a number of prefaces for orations and speeches. All which authorities and precedents may fairly overweigh Aristotle's opinion, who would have us change a rich wardrobe for a pair of shears. Therefore that part of knowledge concerning provision or preparatory store was not to be omitted, though here I have said enough respecting it. For as it is common to both, logic as well as rhetoric, I have chosen in treating of logic only to mention it by the way, referring the fuller discussion of it to rhetoric.

The other part of invention (namely Topics) I will divide into general and particular. General has been sufficiently handled in logic, so that there is no need to dwell on the explanation of it. Only it may be observed by the way, that this kind of Topic is of use not only in argumentations, where we are disputing with another, but also in meditations, where we are considering and resolving anything with ourselves; neither does it serve only to prompt and suggest what we should affirm and assert, but also what we should inquire or ask. For a faculty of wise interrogating is half a knowledge. For Plato says well, "whosoever seeks a thing, knows that which he seeks for in a general notion; else how shall he know it when he has found it" [4]? And therefore the fuller and more certain our anticipation is, the more direct and compendious is our search. The same places therefore which will help us to shake out the folds of the intellect within us, and to draw forth the knowledge stored therein, will also help us to gain knowledge from without; so that if a man of learning and experience were before us, we should know how to question him wisely and to the purpose; and in like manner how to select and peruse with advantage those authors, books, and parts of books, which may best instruct us concerning that which we seek.

But Particular Topics contribute much more to those purposes whereof I speak, and are to be accounted most useful. Of these there is indeed some slight mention in some writers, but they have not been fully handled, according to the dignity of the subject. But leaving the humour which has reigned too long in the schools,—which is to pursue with infinite subtlety the things which are near at hand, and never to go near those which lie a little further off,—I for my part receive particular Topics (that is places of invention and inquiry appropriated to particular subjects and sciences) as things of prime use. They are a kind of mixtures of logic with the proper matter of each science. For he must be a trifler and a man of narrow mind who thinks that the perfect art of invention of knowledge can be devised and propounded all at once; and that then it needs only to be set at work. Let men be assured that the solid and true arts of invention grow and increase as inventions themselves increase; so that when a man first enters into the pursuit of any knowledge, he may have some useful precepts of invention; but when he has made further advances in that knowledge, he may and ought to devise new precepts of invention, to lead him the better to that which lies beyond. It is indeed like journeying in a champagne country; for when we have gone some part of our way, we are not only nearer to our journey's end, but we can likewise see better that part of the way which remains. In the same manner in sciences every step forward on the journey gives a nearer view of that which is to come. But I have thought right to annex an example of this kind of Topic, seeing I set it down among the Deficients.

A Particular Topic, or Articles of Inquiry concerning Heavy and Light.

1. Inquire what bodies are susceptible of the motion of gravity, what of levity, and if there be any of an intermediate and indifferent nature.

2. After the simple inquiry concerning heavy and light proceed to comparative inquiry; as what heavy bodies weigh more, what less, in the same dimensions. Likewise of light bodies, which rise quicker, which slower.

[3] Cic. *De Oratore*, ii. 32–34.

[4] Bacon probably refers to the *Meno*, ii. p. 80.

3. Inquire what effect the quantity of a body has in the motion of gravity. At first sight indeed this may appear superfluous; for the proportions of motion ought to follow the proportions of quantity; but the case is otherwise. For although in the scales the quantity of a body makes up the gravity (the force of the body being there collected, by the recoil or resistance of the scales or beam), yet where there is but little resistance (as in the fall of bodies through air) the velocity of the fall is little hastened by the quantity of the body; for a ball of twenty pounds weight falls to the ground in nearly the same time as a ball of one pound.

4. Inquire whether the quantity of a body can be so increased as entirely to lose the motion of gravity; as in the earth, which is pendulous, but falls not. Can there then be other substances so massive as to support themselves? For the motion towards the centre of the earth is a fiction; and every great mass abhors all local motion, unless it be overcome by another stronger appetite.

5. Inquire what power and operation the resistance of an intervening or opposing body may have to control the motion of gravity. For a descending body either cuts and penetrates through an opposing body, or is stopped by it. If it pass through, penetration takes place either with slight resistance, as in air, or with a stronger, as in water. If it be stopped, it is either by an unequal resistance, where there is a superiority of weight, as if wood be placed on the top of wax; or by an equal resistance, as if water be placed on the top of water, or wood upon wood of the same kind; which is what the schoolmen (upon no solid apprehension) term the non-gravitation of a body in its own place. And all these things vary the motion of gravity. For heavy things move one way in the scales, and another in falling; one way (which may seem strange) when the scales are hanging in the air, another when they are sunk in water; one way again in falling through water, another in floating or being carried upon it.

6. Inquire what power and operation the figure of a descending body has in directing the motion of gravity; as if a figure be broad and thin, cubic, oblong, round, pyramidal; also when bodies turn, and when they keep the same position in which they were let fall.

7. Inquire what power and operation the continuation and progression of the descent or fall has in increasing the velocity and impetus, and in what proportion and to what extent that velocity will increase. For the ancients upon slight consideration imagined that this motion, being natural, was continually increasing and strengthening.

8. Inquire what power and operation the distance or nearness of the falling body to the earth has, in making it fall quicker or slower, or not at all (if it be beyond the orb of the earth's activity, according to Gilbert's opinion); and also what is the effect of the plunging of a descending body further into the depths of the earth, or of the location thereof nearer the surface. For this also varies the motion, as is perceived by miners.

9. Inquire what power and operation the difference of the bodies has, through which the motion of gravity is diffused and communicated; and whether it is communicated as well through soft and porous bodies, as through hard and solid ones; as if the beam of a pair of scales on one side of the tongue be made of wood, on the other of silver (though both be reduced to the same weight), will it produce any variation in the scales? Likewise will metal laid on wood, or on a blown bladder, weigh the same as it does on the bottom of the scale?

10. Inquire what power and operation the distance of the body from the fulcrum has in the communication of the motion of gravity; that is, in the sooner or later perception of the weight or pressure: as in scales, if one arm of the beam be longer than the other (though both are of the same weight), does this of itself incline the scale? or in the syphon, where the longer limb will certainly draw the water, though the shorter (being made more capacious) contain a greater weight of it [5].

[5] The theory of the lever, to which the first part of this inquiry relates, was as well understood in Bacon's time as it is now; that of the siphon, inasmuch as it depends on the idea of atmospherical pressure, was then unknown, and could not be established until

11. Inquire what power the mixing or coupling of a light body with a heavy one has in lessening the gravity of a body; as in the weight of animals alive and dead.

12. Inquire of the secret ascents and descents of the lighter and heavier parts in one entire body; whence fine separations often take place; as in the separation of wine and water, the rising of cream, and the like.

13. Inquire what is the line and direction of the motion of gravity; how far it follows the centre or mass of the earth, how far the centre of the body itself, that is the strife and pressure of its parts. For these centres, though convenient for demonstrations, are of no effect in nature.

14. Inquire touching the motion of gravity as compared with other motions; what motions it overcomes, and what overcome it. As in violent motion (as it is called) the motion of gravity is overpowered for a time; and as when a little magnet lifts a piece of iron much heavier than itself, the motion of gravity yields to the motion of sympathy.

15. Inquire touching the motion of air; whether it rise upwards, or is as it were indifferent. And this is hard to discover, except by some subtle experiments. For the springing up of air at the bottom of water is rather caused by the force of the water than the motion of the air; seeing that the same thing happens also with wood. But air mingled with air gives no evidence, seeing that air in air appears no less light, than water in water appears heavy; but in a bubble, where there is a thin film drawn round it, it is stationary for a time.

16. Inquire what is the limit of lightness; for men do not mean (I suppose) that as the centre of the earth is the centre of gravity, so the extreme convexity of the heaven is the term of lightness; is it that as heavy bodies seem to fall till they rest and reach the immovable, so light bodies rise till they begin to rotate, and attain as it were motion without limit?

17. Inquire why vapours and exhalations rise as high as what is called the middle region of the air; seeing they consist of a somewhat heavy matter, and the rays of the sun at intervals (that is, at night) cease their operation.

18. Inquire of the rule which governs the upward motion of flame; which is the more mysterious as flame expires every instant, except perhaps it be in the midst of larger flames; for flames separated from their continuity last but a little while.

19. Inquire of the upward motion of the activity of heat; as when the heat of red-hot iron spreads faster upwards than downwards.

Such then is an instance of a Particular Topic. In the meantime I again repeat my former advice; namely, that men ought so to vary their particular topics, as, after any great advance has been made in the inquiry, to set out another and again another topic, if they desire to climb the heights of the sciences. But so much importance do I attribute to Particular Topics, that I design to construct a special work concerning them in the more important and obscure subjects of nature. For we can command our questions, though we cannot command the nature of things. And so much for Invention.

CHAPTER IV.

Division of the art of Judging into judgment by Induction *and judgment by* Syllogism. *The first whereof is referred to the New Organon. First division of Judgment by Syllogism into* Reduction Direct *and* Reduction Inverse. *Second division of the same into* Analytic *and doctrine concerning* Detection of Fallacies. *Division of the doctrine concerning the detection of fallacies into detection of* Sophistical *fallacies, fallacies of* Interpretation, *and fallacies of* false appearances or Idols. *Division of Idols into Idols of the* Tribe, *Idols of the* Cave, *and Idols of the* Market-place. *Appendix to the Art of Judging; viz. concerning the* Analogy of Demonstrations according to the nature of the subject.

Let us now pass on to Judgment, or the art of judging, which handles the nature of proofs and demonstrations. In this art (as indeed it is commonly received)

this idea was introduced by Torricelli. The experiment which bears his name, and which was in effect the construction of a mercurial barometer, corresponds in the history of physics to the invention of the telescope in that of astronomy.

the conclusion is made either by induction or by syllogism. For enthymems and examples are but abridgments of these two. With regard however to judgment by induction there is nothing to detain us; for here the same action of the mind which discovers the thing in question judges it; and the operation is not performed by help of any middle term, but directly, almost in the same manner as by the sense. For the sense in its primary objects at once apprehends the appearance of the object, and consents to the truth thereof. In the syllogism it is otherwise; for there the proof is not immediate, but by mean. And therefore the invention of the mean is one thing, and the judgment of the consequence is another; for the mind ranges first, and rests afterwards. But the vicious form of induction I entirely disclaim; and as for the legitimate form, I refer it to the New Organon. Enough here therefore of Judgment by Induction.

For the other judgment by Syllogism, what need to speak; seeing it has been beaten over and over by the subtlest labours of men's wits and reduced to many niceties? And no wonder, for it is a thing most agreeable to the mind of man. For the mind of man is strangely eager to be relieved from suspense, and to have something fixed and immovable, upon which in its wanderings and disquisitions it may securely rest. And assuredly as Aristotle endeavours to prove that in all motion there is some point quiescent; and as he very elegantly interprets the ancient fable of Atlas, who stood fixed and supported the heaven on his shoulders, to be meant of the poles or axletree of heaven, whereupon the conversion is accomplished [1]; so do men earnestly desire to have within them an Atlas or axletree of the thoughts, by which the fluctuations and dizziness of the understanding may be to some extent controlled; fearing belike that their heaven should fall. And hence it is that they have been in too great a hurry to establish some principles of knowledge, round which all the variety of disputations might turn, without peril of falling and overthrow; not knowing that he who makes too great haste to grasp at certainties shall end in doubts, while he who seasonably restrains his judgment shall end in certainties.

So then this art of judgment by Syllogism is but the reduction of propositions to principles in a middle term; the principles being understood as agreed upon and exempted from argument; and the invention of the middle terms left to the free exercise of wit and inquiry. Now this reduction is of two kinds: direct and inverse; direct, when the proposition is reduced to the principle; which they term proof *ostensive;* inverse, when the contradictory of the proposition is reduced to the contradictory of the principle; which they call proof *per incommodum*, or by showing that it involves an absurdity. But the number of series or middle terms is greater or less as the proposition stands more or less removed from the principle.

This being premised, I will divide the art of judgment (according to the usual manner) into Analytic, and the doctrine concerning *Elenches*, or detection of fallacies; whereof the one proceeds by way of direction, the other by way of caution. Analytic sets down true forms of consequences in argument; from which if there be any variation or deflexion, the conclusion is detected to be faulty; and this contains in itself a kind of detection, or refutation: for the straight (as they say) indicates what is not straight as well as what is. And yet it is safest to employ Elenches, as monitors, for the better detection of fallacies by which the judgment would otherwise be ensnared. In Analytic however I find no deficiency; but it is rather overladen with superfluities than in need of additions.

The doctrine of detection of fallacies I divide into three parts; detection of *sophistical* fallacies, of fallacies of *interpretation*, and of *false appearances* or *Idols*. The detection of sophistical fallacies is especially useful. For although the grosser kind of fallacies is well compared by Seneca [2] to the feats of jugglers, in which though we know not how the thing is done, yet we know well it is not as it seems to be; yet the more subtle sophisms not only put a man beside his answer, but many times seriously confound his judgment.

This part concerning the detection of sophistical fallacies is excellently handled

[1] Arist. *De Mot. Anim.* 2 and 3.

[2] Seneca, *Epist.* 45.

by Aristotle in the way of precepts, but still more excellently by Plato in the way of examples: and that not only in the persons of the ancient sophists (Gorgias, Hippias, Protagoras, Euthydemus, and the rest), but even in Socrates himself, who professing to affirm nothing, but to infirm that which was affirmed by another, has most wittily expressed all the forms of fallacy, objection, and redargution. In this part therefore I have no deficiency to report. In the meantime I may observe, that although I have said that the honest and principal use of this doctrine is for redargution of sophisms; yet it is manifest that the degenerate and corrupt use is for raising, by means of these very sophisms, captions and contradictions. And this passes for a great faculty, and no doubt is of very great advantage; though the difference be good which was made between an orator and a sophist, that the one is as the greyhound, which has his advantage in the race, the other as the hare, which has her advantage in the turn.

Next come fallacies of Interpretation; for so (borrowing the name rather than the sense from Aristotle) I will term them. Let me call to mind then what I said above (in speaking of Primitive or Summary Philosophy) touching the Transcendental or Adventitious Conditions or Adjuncts of Essences. These are Greater, Less, Much, Little, Before, After, Identity, Diversity, Potential, Actual, Habit, Privation, Whole, Parts, Active, Passive, Motion, Rest, Entity, Non-entity, and the like. And first let the different ways which I mentioned of viewing these things be remembered and noted; namely that they may be inquired either physically or logically. Now the physical handling of them I referred to Primitive or Summary Philosophy. There remains then the logical. And this is the very thing which at present I mean by the doctrine of the detection of fallacies of Interpretation. Certainly it is a sound and good part of learning. For common and general notions enter necessarily into every discussion; so that unless great care be taken to distinguish them well at the outset, all the light of disputations will be strangely clouded with darkness by them, and the matter end in disputes about words. For equivocations and false acceptations of words (especially of this sort) are the sophisms of sophisms; and therefore I have thought it better that the treatment of them should be made a part by itself, than that it should be either included in Summary Philosophy or Metaphysic, or placed partly under Analytic; as has been done by Aristotle confusedly enough. The name I have given it is taken from the use; because its true use is simply redargution and caution with regard to the use of words. Moreover that part concerning the Predicaments, if rightly managed, relating to cautions against confounding and transposing the terms of definitions and divisions, I hold to be of principal use, and wish it to be referred to this place. And so much for the Detection of Fallacies of Interpretation.

As for the detection of False Appearances or Idols, Idols are the deepest fallacies of the human mind. For they do not deceive in particulars, as the others do, by clouding and snaring the judgment; but by a corrupt and ill-ordered predisposition of mind, which as it were perverts and infects all the anticipations of the intellect. For the mind of man (dimmed and clouded as it is by the covering of the body), far from being a smooth, clear, and equal glass (wherein the beams of things reflect according to their true incidence), is rather like an enchanted glass, full of superstition and imposture. Now idols are imposed upon the mind, either by the nature of man in general; or by the individual nature of each man; or by words, or nature communicative. The first part of these I call Idols of the *Tribe*, the second the Idols of the *Cave*, the third the Idols of the *Market-place*. There is also a fourth kind which I call the Idols of the *Theatre*, superinduced by corrupt theories or systems of philosophy, and false laws of demonstration. But this kind may be rejected and got rid of: so I will leave it for the present. The others absolutely take possession of the mind, and cannot be wholly removed. In these therefore Analytic is not to be looked for; but the doctrine of Elenches is with regard to the idols themselves a primary doctrine. Nor (to say truth) can the doctrine concerning Idols be reduced to an art; all that can be done is to use a kind of thoughtful prudence to guard against them. The full and subtle handling of these however I reserve for the New Organon, making here only a few general observations touching them.

As an example of the Idols of the Tribe, take this. The nature of the human mind is more affected by affirmatives and actives than by negatives and privatives; whereas by right it should be indifferently disposed towards both. But now a few times hitting or presence produces a much stronger impression on the mind than many times failing or absence: a thing which is as the root of all vain superstition and credulity. And therefore it was well answered by one who when the table was shown to him hanging in a temple of such as had paid their vows upon escape from shipwreck, and he was pressed to say whether he did not now acknowledge the power of Neptune, "Yea," asked he in return, "but where are they painted that were drowned after paying their vows"[3]? And so it is in similar superstitions, as astrology, dreams, omens, and the like. Here is another instance. The spirit of man (being of an equal and uniform substance) pre-supposes and feigns in nature a greater equality and uniformity than really is. Hence the fancy of the mathematicians that the heavenly bodies move in perfect circles, rejecting spiral lines. Hence also it happens, that whereas there are many things in nature unique and full of dissimilarity, yet the cogitation of man still invents for them relatives, parallels, and conjugates. Hence sprang the introduction of an element of fire, to keep square with earth, water, and air. Hence the chemists have marshalled the universe in phalanx; conceiving, upon a most groundless fancy, that in those four elements of theirs (heaven, air, water, and earth,) each species in one has parallel and corresponding species in the others[4]. The third example is of kin to the last; Man is as it were the common measure and mirror of nature. For it is not credible (if all particulars be gone through and noted) what a troop of fictions and idols the reduction of the operations of nature to the similitude of human actions has brought into natural philosophy; I mean, the fancy that nature acts as man does. Neither are these much better than the heresy of the Anthropomorphites, bred in the cells of gross and solitary monks; or the opinion of Epicurus answering 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 heaven with stars and lights, like an ædile"[5]? For if that great workmaster had acted as an ædile, he would have cast the stars into some pleasant and beautiful order, like the frets in the roofs of palaces; whereas one can scarce find a posture in square or triangle or straight line amongst such an infinite number. So differing a harmony is there between the spirit of man and the spirit of nature.

With regard to the Idols of the Cave, they arise from each man's peculiar nature both of mind and body; and also from education and custom, and the accidents which befall particular men. For it is a most beautiful emblem, that of Plato's cave: for (not to enter into the exquisite subtlety of the allegory) if a child were kept in a dark grot or cave under the earth until maturity of age, and then came suddenly abroad, and beheld this array of the heavens and of nature, no doubt many strange and absurd imaginations would arise in his mind. Now we, although our persons live in the view of heaven, yet our spirits are included in the caves of our own bodies; so that they must needs be filled with infinite errors and false appearances, if they come forth but seldom and for brief periods from their cave, and do not continually live in the contemplation of nature, as in the open air. And with this emblem of Plato's concerning the cave the saying of Heraclitus agrees well," that men seek the sciences in their own proper worlds, and not in the greater world"[6].

[3] See *Nov. Org.* 46. i.

[4] See note on *Nov. Org.* i. 45.—*J. S.*

[5] Cicero *De Nat. Deor.* i. c. 9. Compare the following extract from Galileo's letter to Gallanzone Gallanzoni:—"Uno dei nostri più celebri architetti se avesse avuto a compartire nella gran volta del cielo la moltitudine di tante stelle fisse, credo io che distribuite le avrebbe con bei partimenti di quadrati, esagoni, ed ottangoli; interzando le maggiori tra le mezzane e le piccole, con sue intere correspondenze, parendogli in questo modo di valersi di belle proporzione: ma all incontro Iddio, quasi che colla mano del caso le abbia disseminate, pare a noi che senza regola simmetria o eleganza alcuno le abbia colassù sparpagliate".

[6] Plato, *Republ.* vi. For the reference to Heraclitus, see note to *Nov. Org.* i. 42.

But the Idols of the Market-place are most troublesome; which have crept into the understanding through the tacit agreement of men concerning the imposition of words and names. Now words are generally framed and applied according to the conception of the vulgar, and draw lines of separation according to such differences as the vulgar can follow: and where a more acute intellect or a more diligent observation tries to introduce a better distinction, words rebel. And that which is the remedy for this evil (namely definitions) is in most cases unable to cure it; for definitions themselves consist of words, and words beget words. And although we think we govern our words, and it is easy to say "a man should speak as the vulgar, and think as the wise" [7]; and though technical terms (only used by the learned) may seem to answer the purpose; and the setting down of those definitions I spoke of at the entrance of arts (after the prudent course of the mathematicians) may avail to correct the perverted acceptation of terms; yet all is not enough, but the juggleries and charms of words will in many ways seduce and forcibly disturb the judgment, and (after the manner of the Tartar bowmen) shoot back at the understanding from which they proceeded. This evil stands in need therefore of a deeper remedy, and a new one. But here I only glance at these things by the way; in the meantime pronouncing this doctrine (which I call the Great Elenches, or the doctrine concerning the Idols of the Human Mind, native and adventitious) to be wanting. The regular handling of it I refer to the New Organon.

There remains an Appendix to the Art of Judging, of great excellency; which I also set down as deficient: for though Aristotle has noticed the thing, he has nowhere followed out the manner of it. It treats of the application of the differing kinds of proofs to the differing kinds of matters or subjects; and may be called the doctrine of the judgment of judgments. For Aristotle rightly observes, "That we ought not to require either demonstrations from orators or persuasions from mathematicians" [8]. And therefore if there be an error in the kind of proof employed, the judgment itself cannot be truly made. Now whereas there are four kinds of demonstrations,—either by immediate consent and common notions, or by induction, or by syllogism, or by that which Aristotle rightly calls *demonstration in circle* [9], —(that is, not from things higher in the order of nature, but as it were from the same level):—so there are certain subjects and matters in science wherein each of these demonstrations respectively does well, and certain others from which they are respectively excluded. For rigour and curiosity in requiring the more severe kinds of proof in some things, and still more facility and remissness in contenting ourselves with the weaker kinds in others, are to be numbered among the chief causes of detriment and hindrance to knowledge. And so much for the Art of Judging.

CHAPTER V.

Division of the Art of Retaining into the doctrine concerning Helps of Memory, *and the doctrine concerning* Memory itself. *Division of the doctrine concerning Memory itself into* Prenotion *and* Emblem.

The art of retaining or keeping knowledge I will divide into two parts; namely, the doctrine concerning Helps of Memory, and the doctrine concerning Memory itself. The great help to the memory is *writing*; and it must be taken as a rule that memory without this aid is unequal to matters of much length and accuracy; and that its unwritten evidence ought by no means to be allowed. This is particularly the case in inductive philosophy and the interpretation of nature; for a man might as well attempt to go through the calculations of an Ephemeris in his head without the aid of writing, as to master the interpretation of nature by the natural and naked force of thought and memory, without the help of tables duly arranged. But not to speak of the interpretation of nature, which is a new doc-

[7] "Loquendum est ut plures, sententiendum ut pauci."—Niphus's *Comm. on Aristot. de Gen. et Corr.* lib. i. fol. 29. G.

[8] Arist. *Metaph.* ii. 3.

[9] Arist. *Post. Analyt.* ii. 13.

trine, there can hardly be anything more useful even for the old and popular sciences, than a sound help for the memory; that is a good and learned Digest of Common-Places. I am aware indeed that the transferring of the things we read and learn into common-place books is thought by some to be detrimental to learning, as retarding the course of the reader and inviting the memory to take holiday. Nevertheless, as it is but a counterfeit thing in knowledge to be forward and pregnant, except a man be also deep and full, I hold diligence and labour in the entry of common-places to be a matter of great use and support in studying; as that which supplies matter to invention, and contracts the sight of the judgment to a point. But yet it is true that of the methods and frameworks of common-places which I have hitherto seen, there is none of any worth; all of them carrying in their titles merely the face of a school and not of a world; and using vulgar and pedantical divisions, not such as pierce to the pith and heart of things.

For the Memory itself, the inquiry seems hitherto to have been pursued weakly and languidly enough. An art there is indeed extant of it; but it is clear to me that there might be both better precepts for strengthening and enlarging the memory than that art contains, and a better practice of the art itself than that which is received. Not but (if any one chooses to abuse this art for purposes of ostentation) feats can be performed by it that are marvellous and prodigious; but nevertheless it is a barren thing (as now applied) for human uses. At the same time the fault I find with it is not that it destroys and overburdens the natural memory (which is the common objection), but that it is not well contrived for providing assistance to the memory in serious business and affairs. And for my own part (owing perhaps to the life of business I have led) I am ever disposed to make small account of things which make parade of art but are of no use. For the being able to repeat at once and in the same order a great number of names or words upon a single hearing, or to make a number of verses extempore on any subject, or to make a satirical simile of everything that happens, or to turn any serious matter into a jest, or to carry off anything with a contradiction or cavil, or the like, (whereof in the faculties of the mind there is great store, and such as by device and practice may be exalted to an extreme degree of wonder) —all such things I esteem no more than I do the tricks and antics of clowns and rope-dancers. For they are almost the same things; the one an abuse of the powers of the body, the other of the mind; matters perhaps of strangeness, but of no worthiness [1].

The Art of Memory is built upon two intentions; Prenotion and Emblem. By Prenotion I mean a kind of cutting off of infinity of search. For when a man desires to recall anything into his memory, if he have no prenotion or perception of that he seeks, he seeks and strives and beats about hither and thither as if in infinite space. But if he have some certain prenotion, this infinity is at once cut off, and the memory ranges in a narrower compass; like the hunting of a deer within an enclosure [2]. And therefore order also manifestly assists the memory; for we have a prenotion that what we are seeking must be something which agrees with order. So again verse is more easily learned by heart than prose; for if we stick at any word, we have a prenotion that it must be such a word as fits the verse. And this prenotion is the principal part of artificial memory. For in artificial memory we have the *places* digested and prepared beforehand; the *images* we make extempore according to the occasion. But then we have a pre-

[1] Of the art of memory Agrippa remarks: "Solent enim in gymnasiis plerunque hujus artis professione nebulones quidam scholaribus imponere ac rei novitate pecuniolam ab incautis emungere: turpe et impudentis est multarum rerum lectionem instar mercimoniorum ante fores explicare, cum interim vacua domus sit."—*De Incert. et Vanit. Scient.* c. 10.

The illustration at the end of this passage may have suggested that which Bacon employs in speaking of the method of Raymond Lully, vide infrà, p. 533.

In Selden's *Table Talk* he is made to affirm that, whatever may be said of great memories, no man will trust his memory when writing what is to be given to the world. [See *Table Talk*, under title "Minister Divine."]

[2] Compare *Nov. Org.* ii. 26.

notion that the image must be one which has some conformity with the place; and this reminds the memory, and in some measure paves the way to the thing we seek. Emblem, on the other hand, reduces intellectual conceptions to sensible images; for an object of sense always strikes the memory more forcibly and is more easily impressed upon it than an object of the intellect; insomuch that even brutes have their memory excited by sensible impressions, never by intellectual ones. And therefore you will more easily remember the image of a hunter pursuing a hare, of an apothecary arranging his boxes, of a pedant making a speech, of a boy repeating verses from memory, of a player acting on the stage, than the mere notions of invention, disposition, elocution, memory, and action. Other things there are (as I said just now) which relate to the help of memory, but the art as it now is consists of the two above stated. But to follow out the particular defects of arts would be from my purpose. So much therefore for the Art of Retaining or Keeping Knowledge. And now we have arrived in due course at the fourth division of Logic, which treats of the Transmission and Delivery of our knowledge to others.

Book VI.

CHAPTER I.

Division of the art of Transmitting into the doctrine concerning the Organ of Discourse, *the doctrine concerning the* Method of Discourse, *and the doctrine concerning the* Illustration of Discourse. *Division of the doctrine concerning the organ of discourse into the doctrine concerning the* Notations of Things, *concerning* Speech, *and concerning* Writing; *whereof the two first constitute* Grammar, *and are divisions of it. Division of the doctrine concerning the notations of things into* Hieroglyphics *and* Real Characters. *Second division of Grammar into* Literary *and* Philosophic. *Reference of* Poesy in respect of metre *to the doctrine concerning* Speech. *Reference of the doctrine concerning* Ciphers *to the doctrine concerning* Writing.

It is permitted to every man (excellent King) to make merry with himself and his own matters. Who knows then but this work of mine is copied from a certain old book found in the most famous library of St. Victor, of which Master Francis Rabelais made a catalogue[1]? For there is a book there entitled "The Ant-hill of Arts". And certainly I have raised up here a little heap of dust, and stored under it a great many grains of sciences and arts; into which the ants may creep and rest for a while, and then prepare themselves for fresh labours. Now the wisest of kings refers sluggards to the ants; and for my part I hold all men for sluggards who care only to use what they have got, without preparing for new seed-times and new harvests of knowledge.

Let us now proceed to the art of Transmitting, or of producing and expressing to others those things which have been invented, judged, and laid up in the memory; which I will call by a general name the Art of Transmission. This art includes all the arts which relate to words and discourse. For although reason be as it were the soul of discourse, yet in the handling of them reason and discourse should be kept separate, no less than soul and body. The art of transmission I will divide into three parts; the doctrine concerning the Organ of Discourse, the doctrine concerning the Method of Discourse, and the doctrine concerning the Illustration or adornment of Discourse.

The doctrine concerning the Organ of Discourse, which is also called Grammar, has two parts; one relating to Speech, the other to Writing: for Aristotle says rightly that "words are the images of thoughts and letters are the images of words"[2]. Both these I assign to Grammar. But to go a little higher up, before I come to Grammar and the parts thereof just mentioned, I must speak concerning the Organ of Transmission in general. For it seems that the art of transmission has some other children besides Words and Letters. This then may be laid down as a rule; that whatever can be divided into differences sufficiently numerous to explain the variety of notions (provided those differences be perceptible to the sense) may be made a vehicle to convey the thoughts of one man to another. For we see that nations which understand not one another's language carry on their commerce well enough by means of gestures. And in the practice of some who had been deaf and dumb from their birth and were otherwise clever, I have seen wonderful dialogues carried on between them and their friends who had learned to understand their gestures. Moreover it is now well known that in China and the provinces of the furthest East there are in use at this day certain *real characters*, not nominal; characters, I mean, which represent neither

[1] *Pantag.* ii. 7. The humour of making catalogues of imaginary books probably began with Rabelais.

[2] Arist. De *Interpret.* i. 1.

letters nor words, but things and notions [3]; insomuch that a number of nations whose languages are altogether different, but who agree in the use of such characters (which are more widely received among them), communicate with each other in writing; to such an extent indeed that any book written in characters of this kind can be read off by each nation in their own language [4].

The Notes of Things then which carry a signification without the help or intervention of words, are of two kinds: one *ex congruo*, where the note has some congruity with the notion, the other *ad placitum*, where it is adopted and agreed upon at pleasure. Of the former kind are Hieroglyphics and Gestures; of the latter the Real Characters above mentioned. The use of Hieroglyphics is very old, and held in a kind of reverence, especially among the Egyptians, a very ancient nation. So that they seem to have been a kind of earlier born writing, and older than the very elements of letters, except perhaps among the Hebrews. Gestures are as transitory Hieroglyphics. For as uttered words fly away, but written words stand, so Hieroglyphics expressed in gestures pass, but expressed in pictures remain. For when Periander, being consulted with how to preserve a tyranny, bade the messenger follow him, and went into his garden and topped the highest flowers, hinting at the cutting off of the nobility [5], he made use of a Hieroglyphic

[3] In Acosta's *History of the New World* [book vi. c. 5], which is a very interesting book, the writer, in giving an account of the way in which the Mexicans used hieroglyphical characters, makes a digression on the writing of the Chinese, in a manner which indicates that at that time their mode of writing was not generally known.

[4] This assertion was made by the early missionaries, and has been constantly repeated since. Within certain limits it is true; just as an Italian and an Englishman may read or write Latin equally well, though they pronounce it differently. But the structure of the spoken languages, or rather dialects, to which written Chinese can correspond must be identical. It is difficult to attach a precise meaning to such statements as Remusat's "Les signes de leur écriture, pris en général, n'expriment pas des prononciations, mais des idées". Every character has in truth, he immediately afterwards remarks, its sound; and a Chinese book can of course be read aloud in Chinese. Moreover the great majority of Chinese characters carry with them an indication of their pronunciation. They consist of two elements, one being a simpler character of the same sound, although generally speaking of totally different meaning, the other referring more or less precisely to the meaning. Thus the character for a particular kind of tree will contain, besides the phonetic element, the character for tree or wood in general; so too will very frequently that for a thing made of wood. These elements have been termed Phoneticæ and Classificæ. But most of the latter admit of being used in different combinations as Phoneticæ. They correspond precisely with the kind of hieroglyphics which Bunsen calls determinants, and are for the most part the same as the radicals (as they are called) used in arranging words in the Chinese dictionaries. The class of characters of which I have been speaking, is the fourth of the six classes into which Chinese characters are commonly divided. They are called Hiai-Ching, *id est* joined to sound, or Hing-Ching, *id est* representing the sound; and it is said that out of twenty-four thousand characters it was found that twenty-two thousand are of this kind. See Callery, *Systema phoneticum Scripturæ Sinicæ*, i. 9. He refers for his authority to a Chinese encyclopædia.

The view taken of the nature of these characters in Marshman's *Clavis Sinica*, is, as Remusat has pointed out, wholly wrong. It is much to be wished that a person sufficiently acquainted with the subject would investigate the analogy which exists between the Chinese and Egyptian modes of writing; not, of course, with any notion of establishing a historical connexion (as was once attempted) between the two nations. It is exceedingly remarkable, that as early as the fourth dynasty the Egyptians seem to have had a complete and even copious system of purely alphabetic characters, though, as Lepsius has shown, the majority of their alphabetic characters are of later date. I must apologise for the length of this note on a subject not very closely connected with the text.

[5] Compare this with Solyman's lesson to his vizir on the art of sieges. "Come close to me," said the Sultan, "but on your head be it if you tread on the carpet on which I sit." The vizir reflected for a while, then gradually rolling up the carpet, advanced close to his instructor. "All is said," resumed Solyman; "you know now how strong places are to be taken." The lesson was given, it is said, in relation to the siege of Rhodes in 1521.

just as much as if he had drawn it on paper. In the meantime it is plain that Hieroglyphics and Gestures have always some similitude to the thing signified, and are a kind of emblems. Whence I have called them "notes of things by congruity". Real characters on the other hand have nothing emblematic in them, but are merely surds, no less than the elements of letters themselves, and are only framed *ad placitum*, and silently agreed on by custom. It is evident however that a vast multitude of them is wanted for writing; for there ought to be as many of them as there are radical words. This portion therefore of the doctrine of the Organ of Discourse, which relates to the Notes of Things, I set down as wanting. And although it may seem to be of no great use, since words and writing by letters are by far the most convenient organs of transmission; yet I thought good to make some mention of it here, as a thing not unworthy of consideration. For we are handling here the currency (so to speak) of things intellectual, and it is not amiss to know that as moneys may be made of other material besides gold and silver, so other Notes of Things may be coined besides words and letters.

Now therefore I pass on to Grammar, which is as it were the harbinger of other sciences; an office not indeed very noble, yet very necessary; especially as sciences in our age are principally drawn from the learned languages, and are not learned in our mother tongue. Nor must it be esteemed of little dignity, seeing that it serves for an antidote against the curse of the confusion of tongues. For man still strives to renew and reintegrate himself in those benedictions of which by his fault he has been deprived. And as he arms and defends himself against the first general curse of the barrenness of the earth, and of eating bread in the sweat of his face, by the invention of all other arts; so against this second curse of the confusion of tongues he calls in the aid of Grammar; whereof the use in a mother tongue is small; in a foreign tongue more; but most in such foreign tongues as have ceased to be vulgar tongues, and are only extant in books.

Grammar likewise is of two sorts; the one being Literary, the other Philosophical. The one is used simply for languages, that they may be learned more quickly or spoken more correctly and purely; the other ministers in a certain degree to philosophy. And here I am reminded that Cæsar wrote some books on "Analogy"; and a doubt occurs to me, whether they handled this kind of philosophical grammar of which I speak. I suspect however that they did not contain anything very subtle or lofty; but only laid down precepts for a chaste and perfect style, not vitiated or polluted either by a bad habit of speech, or by any particular affectation; in which style himself excelled [6]. Taking the hint however from this, I have thought of a kind of grammar which should diligently inquire, not the analogy of words with one another, but the analogy between words and things, or reason; not going so far however as that interpretation which belongs to Logic. Certainly words are the footsteps of reason, and the footsteps tell something about the body. I will therefore give some sketch of what I mean. But I must first say that I by no means approve of that curious inquiry, which nevertheless so great a man as Plato did not despise [7]; namely concerning the imposition and original etymology of names; on the supposition that they were not arbitrarily fixed at first, but derived and educed by reason and according to significance; a subject elegant indeed, and pliant as wax to be shaped and turned, and (as seeming to explore the recesses of antiquity) not without a kind of reverence,—but yet sparingly true and bearing no fruit. But the noblest species of grammar, as I think, would be this: if some one well seen in a great number of tongues, learned as well as vulgar, would handle the various properties of *languages*; showing in what points each excelled, in what it failed. For so not

[6] Aulus Gellius quotes from the *Analogia* of Cæsar, a precept to avoid an unusual word "veluti scopulum", *Noctes Att.* i. 10. Bacon refers to the *Analogia* in several other places. Vide suprà, p. [476. Observe that he there speaks of it as a *grammatical philosophy* in which Cæsar was endeavouring to bring words, which are the images of things, into congruity with the things themselves. Whence it would seem that he had changed his opinion as to the character of the book; for this would be the very *analogia inter verba et res* from which here he distinguishes it.]

[7] See particularly the *Cratylus*.

only may languages be enriched by mutual exchanges, but the several beauties of each may be combined (as in the Venus of Apelles [8]) into a most beautiful image and excellent model of speech itself, for the right expressing of the meanings of the mind. And at the same time there will be obtained in this way signs of no slight value but well worthy of observation (which a man would hardly think perhaps) concerning the dispositions and manners of peoples and nations, drawn from their languages. I like well that remark of Cicero's that the Greeks had no word to express the Latin *ineptus* ; " because," says he, " that vice was so familiar among the Greeks that they did not perceive it in themselves " [9] ; a censure worthy of the Roman gravity. And how came it that the Greeks used such liberty in composition of words, the Romans on the contrary were so strict and sparing in it ? One may plainly collect from this fact that the Greeks were fitter for arts, the Romans for business : for the distinctions of arts are hardly expressed without composition of words ; whereas for the transaction of business simpler words are wanted. Then again the Hebrews have such a dislike to these compositions that they had rather abuse a metaphor than introduce a compound word : and the words they use are so few and so little mixed, that one may plainly perceive from their very language that they were a Nazarite nation, separated from the rest of the nations. And is it not a fact worthy of observation (though it may be a little shock to the spirits of us moderns) that the ancient languages were full of declensions, cases, conjugations, tenses, and the like, while the modern are nearly stripped of them, and perform most of their work lazily by prepositions and verbs auxiliary ? Surely a man may easily conjecture (how well so ever we think of ourselves) that the wits of the early ages were much acuter and subtler than our own [10]. There are numberless observations of this kind, enough to fill a good volume. And therefore it is not amiss to distinguish Philosophic Grammar from Grammar Simple and Literary, and to set it down as wanting.

To Grammar also I refer all accidents of words, of what kind soever ; such as Sound, Measure, Accent. The primary formation of simple letters indeed (that is, by what percussion of the tongue, by what opening of the mouth, by what meeting of the lips, by what effort of the throat, the sound of each letter is produced) does not belong to Grammar, but is part of the doctrine concerning Sounds, and to be handled under Sense and the Sensible. The sound which I speak of as belonging to Grammar relates only to sweetnesses and harshnesses. Of these some are common to all nations ; for there is no language that does not in some degree shun the hiatus caused by vowels coming together, and the harshnesses caused by consonants coming together. There are others again which are respective, being found pleasing to the ears of some nations and displeasing to others. The Greek language abounds in diphthongs ; the Latin is much more sparing of them. The Spanish dislikes thin letters, and changes them immediately into those of a middle tone [11]. Languages derived from the Goths delight

[8] Not the Venus of Apelles, but the Helen of Zeuxis. [9] Cicero *De Orat.* ii. 4.

[10] On this very interesting question, which Bacon was probably the first to propose, Grimm has some good remarks in his essay on the origin of language, in the *Berlin Transactions* for 1852. He shows that of the two classes of languages here contrasted each has its own merits, observing that mere fulness of grammatical forms is not to be recognised as necessarily an advantage ; else we should be obliged to rate Finnish, in which the noun has thirteen cases, above Sanscrit, in which it has eight, and Greek, in which it has only five. It may be remarked in illustration of this that although there are in Sanscrit past tenses corresponding to the Greek aorists and perfects, yet the accuracy of logical discrimination which appropriates the latter to the completed action belongs to Greek only ; so too of the appropriation of the imperfect to express an uncompleted action. See Bopp, *Comparative Grammar*, § 513.

[11] This is somewhat overstated. The Spanish generally retains the Latin tenuis at the beginning of words and often in the middle. The tendency to the flattening Bacon mentions is most marked in the case of *p* and *b*. See Diez, *Grammatik der Romanischen Sprachen*, i. 252, for a general table of consonantal changes in the Roman tongues. A remarkable peculiarity in Spanish is the substitution of *h* (now dropped in pronunciation, for the Latin *f* at the beginning of words. It is not however universal, and belongs

in aspirates [12]. Many things of this kind might be mentioned; but these are perhaps more than enough.

The Measure of words has produced a vast body of art; namely Poesy, considered with reference not to the matter of it (of which I have spoken above) but to the style and form of words: that is to say, metre or verse; wherein the art we have is a very small thing, but the examples are large and innumerable. Neither should that art (which the grammarians call Prosody) be confined to the teaching of the kinds and measures of verse. Precepts should be added as to the kinds of verse which best suit each matter or subject. The ancients used hexameter for histories and eulogies; elegiac for complaints; iambic for invectives; lyric for odes and hymns. Nor have modern poets been wanting in this wisdom, so far as their own languages are concerned. The fault has been, that some of them, out of too much zeal for antiquity, have tried to train the modern languages into the ancient measures (hexameter, elegiac, sapphic, etc. [13]); measures incompatible with the structure of the languages themselves, and no less offensive to the ear. In these things the judgment of the sense is to be preferred to the precepts of art,—as the poet says,

Cœnæ fercula nostræ
Mallem convivis quam placuisse cocis [14].

And it is not art, but abuse of art, when instead of perfecting nature it perverts her. But for poesy (whether we speak of stories or metre) it is (as I said before) like a luxuriant plant, that comes of the lust of the earth, without any formal seed. Wherefore it spreads everywhere and is scattered far and wide,—so that it would be vain to take thought about the defects of it. With this therefore we need not trouble ourselves. And with regard to Accents of words, it is too small a matter to speak of; unless perhaps it be thought worth remarking, that while the accentuation of *words* has been exquisitely observed, the accentuation of *sentences* has not been observed at all. And yet it is common to all mankind almost to drop the voice at the end of a period, to raise it in asking a question, and other things of the kind not a few. And so much for the part of Grammar which relates to Speech.

As for Writing, it is performed either by the common alphabet (which is used by everybody) or by a secret and private one, agreed upon by particular persons: which they call *ciphers*. And with regard to the common orthography itself, a controversy and question has been raised among us,—namely, whether words ought to be written as they are pronounced, or in the usual way. But this apparently reformed style of writing (viz. in which the spelling should agree with the pronunciation) belongs to the class of unprofitable subtleties. For the pro-

to a comparatively late period of the language, no trace of it being found, according to Diez, in the poem of the *Cid*.

[12] Bacon no doubt refers to High and Low German. The Gothic itself—commonly called Mœso-Gothic, but which might perhaps be as fitly called Italian-Gothic, as the existing remains of it belong probably to Italy in the time of Theodoric and his successors—is much less charged with aspirates than the tongues which claim descent from it. The last editor of Ulphilas, after pointing out the prevalence of liquids and tenues, observes rather fancifully: "Our ancestors were not a mountain people; they must have dwelt on plains under a moist, mild climate", The analogy of Gothic with Sanscrit is very striking. Bopp remarks: "When I read the venerable Ulphilas, I feel as if I were reading Sanscrit".

[13] This affectation prevailed about the same time in France and Italy, and a little later in England. Jodelle was the first person, according to Pasquier, who produced a French hexameter and pentameter.

Augustus von Schlegel, in his *Indische Bibliothek* has an interesting essay on this subject, especially with respect to the Greek hexameter. He endeavours to determine the modifications necessary in order that it may be really naturalised in modern languages.

[14] Mart. ix. 83.:—

The dinner is for eating, and my wish is
That guests and not that cooks should like the dishes.

nunciation itself is continually changing; it does not remain fixed; and the derivations of words, especially from foreign tongues, are thereby completely obscured. And as the spelling of words according to the fashion is no check at all upon the fashion of pronunciation, but leaves it free, to what purpose is this innovation [15]?

[15] Every living language is continually changing; and the orthography gradually follows changes of pronunciation. But to make the pronunciation of the present moment the standard of orthography is to set aside as far as possible the historical element in the development of the language, and thus greatly to diminish its value as a record of the progress of human thought, not to mention the effect which such a system would have in making works composed before the era of the last reformation unintelligible.

[I cannot help thinking that Bacon would have pronounced a less confident judgment on this question, if it had occurred to him that a system of notation might be contrived which should not only represent the pronunciation of the particular time, but *accompany all changes of pronunciation which time might introduce*; so that the written word should be *at all times* a true description of the spoken word. For this purpose nothing more is required than an alphabet containing as many distinct *characters* as there are distinguishable elementary *sounds* in the language, so that the same sound may always be represented by the same character or combination of characters, and no combination of characters may be used to represent more than one combination of sounds. Against a reform of orthography founded upon such a reconstruction of the alphabet, it appears to me that none of the objections either in the text or in the note can be justly urged. With regard to the history of the past, everything would remain as it is. A dictionary containing the old and new spelling of every word in the language would effectually preserve its etymological history (so far as our present orthography does preserve it) up to the present time. For the future pronunciation would still be free to change, and orthography would still follow; but the changes of pronunciation would be less rapid and capricious, and the corresponding changes of orthography would be not gradual but immediate. Pronunciation would change, not according to fashion or accident, but according to the laws of nature; and each change would be registered as it came in the printed records of the language. All this would surely be a great advantage, whether we regard language as a medium of communication, for which it serves best when it is most uniform and constant, or as a record of the progress of human thought, for which it serves the better in proportion as capricious and accidental changes are excluded and natural changes marked and registered.

Bacon was probably thinking of some particular scheme proposed in his own day, in which the existing alphabet was to be used. Many such partial schemes of orthographical reform have been attempted from time to time, all of which may be justly condemned as " useless subtilties," not because the thing aimed at—*ut scilicet scriptio pronunciationi consona sit*—would be useless if accomplished, but because, without such a reconstruction of the alphabet as should enable us to assign to each distinct sound a distinct character, the thing *cannot* be accomplished. With an alphabet of only twenty-six letters, it is impossible to make the spelling of English represent the pronunciation, because there are more than twenty-six distinct sounds used in English speech. It has recently been shown, however, that with an alphabet of only forty letters, every sound used in speaking good English may be represented accurately enough for all practical purposes; and a few more would probably include all the sounds of all the classical languages in Europe.

Two or three alphabets of this kind have been suggested within the last hundred years. There was one proposed by Benjamin Franklin, another by Dr. William Young, another by Sir John Herschell. But the first serious attempt to bring such an alphabet into general use, and fairly to meet and overcome all the practical as well as all the theoretical difficulties, was made by Mr. Alexander Ellis and Mr. Isaac Pitman in 1848. And there can be no doubt that by means of their alphabet every English word now in use may be so written that the spelling shall contain a sufficient direction for the pronunciation. Nor is there any reason to apprehend that it would ever be necessary to remodel it, since, however the fashion of pronunciation may change, it is not likely that any new elementary sounds will be developed; and therefore, though we might have to spell some of our words differently, we should still be able to spell them out of the same alphabet

Let us proceed then to Ciphers [16]. Of these there are many kinds: simple ciphers; ciphers mixed with non-significant characters; ciphers containing two different letters in one character; wheel-ciphers; key-ciphers; word-ciphers; and the like. But the virtues required in them are three; that they be easy and not laborious to write; that they be safe, and impossible to be deciphered; and lastly that they be, if possible, such as not to raise suspicion. For if letters fall into the hands of those who have power either over the writers or over those to whom they are addressed, although the cipher itself may be safe and impossible to decipher, yet the matter comes under examination and question; unless the cipher be such as either to raise no suspicion or to elude inquiry. Now for this elusion of inquiry, there is a new and useful contrivance for it, which as I have it by me, why should I set it down among the desiderata, instead of propounding the thing itself? It is this: let a man have two alphabets, one of true letters, the other of non-significants; and let him infold in them two letters at once; one carrying the secret, the other such a letter as the writer would have been likely to send, and yet without anything dangerous. Then if any one be strictly examined as to the cipher, let him offer the alphabet of non-significants for the true letters, and the alphabet of true letters for non-significants. Thus the examiner will fall upon the exterior letter; which finding probable, he will not suspect anything of another letter within. But for avoiding suspicion altogether, I will add another contrivance, which I devised myself when I was at Paris in my early youth, and which I still think worthy of preservation. For it has the perfection of a cipher, which is to make anything signify anything; subject however to this condition, that the infolding writing shall contain at least five times as many letters as the writing infolded: no other condition or restriction whatever is required. The way to do it is this: First let all the letters of the alphabet be resolved into transpositions of two letters only. For the transposition of two letters through five places will yield thirty-two differences; much more twenty-four, which is the number of letters in our alphabet [17]. Here is an example of such an alphabet.

Example of an Alphabet in two letters [18].

A	*B*	*C*	*D*	*E*	*F*	*G*	*H*
Aaaaa.	*aaaab.*	*aaaba.*	*aaabb.*	*aabaa.*	*aabab.*	*aabba.*	*aabbb.*
I	*K*	*L*	*M*	*N*	*O*	*P*	*Q*
abaaa.	*abaab.*	*ababa.*	*ababb.*	*abbaa.*	*abbab.*	*abbba.*	*abbbb.*
R	*S*	*T*	*V*	*W*	*X*	*Y*	*Z.*
baaaa.	*baaab.*	*baaba.*	*baabb.*	*babaa.*	*babab.*	*babba.*	*babbb.*

As for the fear that, if such a reformation were adopted, works composed previously would become unintelligible, it has been ascertained by many experiments that children who have learned to read books printed phonetically in the new alphabet easily teach themselves to read books printed in the ordinary way; and therefore, even if the new system should become universal for all new books, no one would have any difficulty in mastering the old ones.—*J. S.*]

[16] See, for an account of these ciphers, the appendix at the end of the treatise. Bacon's biliteral cipher seems, as I have there pointed out, to be connected with one which had been given by Porta, which also depends on the principle of which the Electric Telegraph is now a familiar illustration, that any number of things may be denoted by combinations of two signs, as in the binary scale of numeration.

[17] There is a simpler way of attaining the same end, viz., by using two sets of characters, the differences being, as in Bacon's method, intended to be imperceptible, and making the length of the intervals at which those of one set recur significant of the letters of the "interius scriptum." This is a system mentioned by writers on the subject; whether ever actually used, I do not know.

[18] For this and the following examples, a special character is used in the original edition, resembling handwriting, and apparently cut in wood for the occasion. But as it is only in the *Alphabetum Biforme* and the *Exempla Accommodationis* that anything

Nor is it a slight thing which is thus by the way effected. For hence we see how thoughts may be communicated at any distance of place by means of any objects perceptible either to the eye or ear, provided only that those objects are capable of two differences; as by bells, trumpets, torches, gunshots, and the like. But to proceed with our business: when you prepare to write, you must reduce the interior epistle to this biliteral alphabet. Let the interior epistle be

Fly.

Example of reduction.

F L Y.

aabab. ababa. babba.

Have by you at the same time another alphabet in two *forms*; I mean one in which each of the letters of the common alphabet, both capital and small, is exhibited in two different forms,—any forms that you find convenient.

Example of an Alphabet in two forms[19].

a	*b*	*a*	*b*	*a*	*b*	*a*	*b*	*a*	*b*	*a*	*b*
A	*A*	*a*	*a*	*B*	*B*	*b*	*b*	*C*	*C*	*c*	*c*
D	*D*	*d*	*d*	*E*	*E*	*e*	*e*	*F*	*F*	*f*	*f*
G	*G*	*g*	*g*	*H*	*H*	*h*	*b*	*I*	*J*	*i*	*i*
K	*K*	*k*	*k*	*L*	*L*	*l*	*l*	*M*	*M*	*m*	*m*
N	*N*	*n*	*n*	*O*	*O*	*o*	*o*	*P*	*P*	*p*	*p*
Q	*Q*	*q*	*q*	*R*	*R*	*r*	*r*	*S*	*S*	*s*	*s*
T	*T*	*t*	*t*	*U*	*U*	*u*	*u*	*v*	*v*		
W	*W*	*w*	*w*	*X*	*X*	*x*	*x*	*Y*	*Y*	*y*	*y*
				Z	*Z*	*z*	*z*				

Then take your interior epistle, reduced to the biliteral shape, and adapt to it letter by letter your exterior epistle in the biform character; and then write it out. Let the exterior epistle be,

Do not go till I come.

Example of Adaptation.

F L Y.

aa bab. ab aba.b a bba.

Do not go till I come.

I add another larger example of the same cipher,—of the writing of anything by anything.

The interior epistle; for which I have selected the Spartan despatch, formerly sent in the *Scytale.*

All is lost. Mindarus is killed. The soldiers want food. We can neither get hence, nor stay longer here.

The exterior epistle, taken from Cicero's first letter, and containing the Spartan despatch within it.

depends upon the shape of the letters, I have printed all the rest in the common italic type.—*J. S.*

[19] This biform alphabet is set out somewhat differently in the original edition. The characters are cut to represent handwriting, the distinctions being made by loops or flourishes; and the (*a*) or (*b*) is repeated in every case. By keeping the columns distinct, I have avoided the necessity of this repetition; and I have obtained the requisite distinction between the two sets of characters by using types belonging to two different founts. The particular forms of the letters are of course immaterial, so long as those which stand for *a* can be clearly distinguished from those which stand for *b*; and the table, as I have arranged it, will be found easier of reference.—*J. S.*

In all duty or rather piety towards you I satisfy everybody except myself. Myself I never satisfy. For so great are the services which you have rendered me, that seeing you did not rest in your endeavours on my behalf till the thing was done, I feel as if life had lost all its sweetness, because I cannot do as much in this cause of yours. The occasions are these: Ammonius, the king's ambassador, openly besieges us with money: the business is carried on through the same creditors who were employed in it when you were here, etc.

The doctrine of Ciphers carries along with it another doctrine, which is its relative. This is the doctrine of deciphering, or of detecting ciphers, though one be quite ignorant of the alphabet used or the private understanding between the parties: a thing requiring both labour and ingenuity, and dedicated, as the other likewise is, to the secrets of princes. By skilful precaution indeed it may be made useless; though as things are it is of very great use. For if good and safe ciphers were introduced, there are very many of them which altogether elude and exclude the decipherer, and yet are sufficiently convenient and ready to read and write. But such is the rawness and unskilfulness of secretaries and clerks in the courts of kings, that the greatest matters are commonly trusted to weak and futile ciphers.

It may be suspected perhaps that in this enumeration and *census*, as I may call it, of arts, my object is to swell the ranks of the sciences thus drawn up on parade, that the numbers of them may raise admiration; whereas in so short a treatise, though the numbers may perhaps be displayed, the force and value of them can hardly be explained. But I am true to my design, and in framing this globe of knowledge I do not choose to omit even the smaller and more remote islands. And though my handling of these things be cursory, it is not (as I think) superficial; but out of a large mass of matter I pick out with a fine point the kernels and marrows of them. Of this however I leave those to judge who are most skilful in such arts. For whereas most of those who desire to be thought multiscient are given to parade the terms and externals of arts, thereby making themselves the admiration of those who do not understand those arts and the scorn of those who do; I hope that my labours will have the contrary fate, and arrest the judgment of those who are most skilful in the several arts, and be less cared for by the rest. As for those arts which may appear to be of a lower order, if any one thinks that I make somewhat too much of them, let him look round, and he will see that men who are great and famous in their own countries, when they come up to the metropolis and seat of empire are almost lost in the crowd, and of no mark [20]; and in like manner it is not strange that these lighter arts when placed by the side of the principal and superior ones appear of less dignity; although to such as have spent their chief study upon them they seem great and illustrious things. And so much for the Organ of discourse.

CHAPTER II.

The doctrine of the Method of Discourse *is made a substantive and principal part of the art of transmitting; and is named* Wisdom of Transmission. *Different kinds of Method are enumerated, with a note of their advantages and disadvantages.*

Let us now come to the doctrine concerning the Method of discourse. This has been commonly handled as a part of Logic: and it also finds a place in Rhetoric, under the name of *Disposition*. But the placing of it in the train of other arts has led to the passing over of many things relating to it which it is useful to know. I have therefore thought fit to make the doctrine concerning Method a substantive and principal doctrine, under the general name of *Wisdom of Transmission*. The kinds of method being various, I will begin by enumerating rather than distributing them. And first, for the "one and only method," with its

[20] Being then, as King James used to say, like ships at sea, and when at home like ships in a creek; a comparison which may possibly have been suggested by this passage, which occurs in the *Advancement* as well as here.

distribution of everything into two members, it is needless to speak of it [1]; for it was a kind of cloud that overshadowed knowledge for awhile and blew over: a thing no doubt both very weak in itself and very injurious to the sciences. For while these men press matters by the laws of their method, and when a thing does not aptly fall into those dichotomies, either pass it by or force it out of its natural shape, the effect of their proceeding is this,—the kernels and grains of the sciences leap out, and they are left with nothing in their grasp but the dry and barren husks [2]. And therefore this kind of method produces empty abridgments, and destroys the solid substance of knowledge.

Let the first difference of Method then be this: it is either *Magistral* or *Initiative*. Observe however that in using the word "initiative," I do not mean that the business of the latter is to transmit the beginnings only of sciences, of the former to transmit the entire doctrine. On the contrary I call that doctrine *initiative* (borrowing the term from the sacred ceremonies) which discloses and lays bare the very mysteries of the sciences. The magistral method teaches; the initiative intimates. The magistral requires that what is told should be believed; the initiative that it should be examined. The one transmits knowledge to the crowd of learners; the other to the sons, as it were, of science. The end of the one is the use of knowledges, as they now are; of the other the continuation and further progression of them. Of these methods the latter seems to be like a road abandoned and stopped up; for as knowledges have hitherto been delivered, there is a kind of contract of error between the deliverer and the receiver; for he who delivers knowledge desires to deliver it in such form as may be best believed, and not as may be most conveniently examined; and he who receives knowledge desires present satisfaction, without waiting for due inquiry; and so rather not to doubt, than not to err; glory making the deliverer careful not to lay open his weakness, and sloth making the receiver unwilling to try his strength. But knowledge that is delivered to others as a thread to be spun on ought to be insinuated (if it were possible) in the same method wherein it was originally invented. And this indeed is possible in knowledge gained by induction; but in this same anticipated and premature knowledge (which is in use) a man cannot easily say how he came to the knowledge which he has obtained. Yet certainly it is possible for a man in a greater or less degree to revisit his own knowledge, and trace over again the footsteps both of his cognition and consent; and by that means to transplant it into another mind just as it grew in his own. For it is in knowledges as it is in plants; if you mean to use the plant, it is no matter what you do with the root; but if you mean to remove it to grow, then it is safer to use roots than slips. So the method of transmitting knowledge which is now in use presents trunks as it were of sciences (and fair ones too), but without the roots; good for the carpenter, but useless for the planter. But if you will have sciences grow, you need not much care about the body of the tree; only look well to this, that the roots be taken up uninjured, and with a little earth adhering to them. Of which kind of transmission the method of the mathematicians has, in that subject, some shadow, but generally I do not see it either put in use or inquired of. Therefore I note it as deficient, and term it the *Handing on of the Lamp*, or Method of Delivery to Posterity [3].

[1] The allusion is to the method of Peter Ramus, which he made to apply to every kind of science, and which depends, as Bacon says, on a dichotomising arrangement. See, for Ramus's tabular statements of the contents of the seven liberal arts, the *Professio Regia P. Rami*. (Basil, 1576; but there is probably an earlier edition.)

[2] Ampère's Essay on the Philosophy of Science, though the work of a very able man, is certainly open to this reproach. His classification attempts to introduce uniformity where uniformity is impossible. The objections to a dichotomising method are pointed out by Aristotle, who shows that the last of the classes which we obtain by it can have only a negative character. Professor Owen, in his Lectures on the Invertebrata, remarks that no class thus constituted has been found satisfactory. Such a one for instance is that denoted by Dr. Prichard's word *Allophyl* for tribes not of Indo-Germanic origin. See Trendelenburg, *Elementa Logices*, p. 129.

[3] This illustrates the circumstance that several of Bacon's minor works are addressed as to a son or sons; by whom we are to understand those who are qualified to be disciples.

Another diversity of Method there is, which in intention has an affinity with the former, but is in reality almost contrary. For both methods agree in aiming to separate the vulgar among the auditors from the select; but then they are opposed in this, that the former makes use of a way of delivery more open than the common, the latter (of which I am now going to speak) of one more secret. Let the one then be distinguished as the *Exoteric* method, the other as the *Acroamatic*; a distinction observed by the ancients principally in the publication of books, but which I transfer to the method of delivery. Indeed this acroamatic or enigmatical method was itself used among the ancients, and employed with judgment and discretion. But in later times it has been disgraced by many, who have made it as a false and deceitful light to put forward their counterfeit merchandise. The intention of it however seems to be by obscurity of delivery to exclude the vulgar (that is the profane vulgar) from the secrets of knowledges, and to admit those only who have either received the interpretation of the enigmas through the hands of the teachers, or have wits of such sharpness and discernment as can pierce the veil.

Next comes another diversity of Method, of great consequence to science; which is the delivery of knowledge in *aphorisms*, or in *methods*. For it is specially to be noted, that it has become the fashion to make, out of a few axioms and observations upon any subject, a kind of complete and formal art, filling it up with some discourses, illustrating it with examples, and digesting it into method. But that other delivery by aphorisms has many excellent virtues whereto the methodical delivery does not attain. First it tries the writer, whether he be light and superficial in his knowledge, or solid. For aphorisms, not to be ridiculous, must be made out of the pith and heart of sciences. For illustration and excursion are cut off; variety of examples is cut off; deduction and connexion are cut off: descriptions of practice are cut off; so there is nothing left to make the aphorisms of but some good quantity of observation. And therefore a man will not be equal to the writing in aphorisms, nor indeed will he think of doing so, unless he feel that he is amply and solidly furnished for the work. But in methods,

—— Tantum series juncturaque pollet,
Tantum de medio sumptis accedit honoris [4],

that those things many times carry a show of I know not what excellent art, which if they were taken to pieces, separated, and stripped, would shrink to little or nothing. Secondly, methodical delivery is fit to win consent or belief, but of little use to give directions for practice; for it carries a kind of demonstration in circle, one part illuminating another, and therefore more satisfies the understanding; but as actions in common life are dispersed, and not arranged in order, dispersed directions do best for them. Lastly, aphorisms, representing only portions and as it were fragments of knowledge, invite others to contribute and add something in their turn; whereas methodical delivery, carrying the show of a total, makes men careless, as if they were already at the end.

Next comes another diversity of Method, which is likewise of great weight; namely the delivery of knowledge by *assertions with proofs*, or by *questions with determinations*; the latter kind whereof, if it be immoderately followed, is as pre-

In the *Redargutio Philosophiarum*, the speaker addresses his audience as "filii;" and we find a corresponding phrase in the *New Atlantis*.

[I understand by *filios* in this passage not so much those who are qualified to be disciples, as those who will carry on the work. The *traditio lampadis* refers to the Greek torch-races, in which there were relays of runners, and each as he was spent handed the torch to a fresh man. The *methodus ad filios* is the method which, having in view the continual progression of knowledge, hands over its unfinished work to another generation, to be taken up and carried forward. See preface to the *Novum Organum*, note B at the end.—*J. S.*]

[4] Hor. *Ep. ad Pisones*, 242:—

The order and the joining give such graces,
Mean matters take such honour from their places.

judicial to the advancement of learning as it is detrimental to the fortunes and progress 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; although it is true that to leave a great and fortified town in the rear would not be always safe. In like manner in the transmission of knowledge confutations should be refrained from; and only employed to remove strong preoccupations and prejudgments, and not to excite and provoke the lighter kind of doubts.

Next comes another diversity of Method, namely that the *method used should be according to the subject-matter which is handled.* For there is one method of delivery in the mathematics (which are the most abstracted and simple of knowledges), another in politics (which are the most immersed and compounded). And (as I have already said) uniformity of method is not compatible with multiformity of matter. Wherefore as I approved of particular Topics for invention, so to a certain extent I allow likewise of Particular Methods for transmission. Next comes another diversity of Method, which in the delivery of knowledge is to be used with discretion. This is regulated according to the informations and anticipations already infused and impressed on the minds of the learners concerning the knowledge which is to be delivered. For that knowledge which comes altogether new and strange to men's minds is to be delivered in another form than that which is akin and familiar to opinions already taken in and received. And therefore Aristotle, when he thinks to tax Democritus, does in truth commend him, where he says, "If we shall indeed dispute, and not follow after similitudes"[5], etc.; thus making it a charge against Democritus, that he was too fond of comparisons. For those whose conceits are already seated in popular opinions, need but to dispute and prove; whereas those whose conceits are beyond popular opinions, have a double labour; first to make them understood, and then to prove them; so that they are obliged to have recourse to similitudes and metaphors to convey their meaning. We see therefore in the infancy of learning, and in rude times, when these conceits which are now old and trivial were new and unheard of, that the world was full of parables and similitudes. For else would men either have passed over without due mark or attention, or else rejected as paradoxical, that which was laid before them. For it is a rule in the art of transmission, that all knowledge which is not agreeable to anticipations or presuppositions must seek assistance from similitudes and comparisons[6].

And so much for the diversities of Method, which have not hitherto been pointed out by others. For as for those other methods,—Analytic, Systatic, Diæretic, also Cryptic, Homeric[7], and the like,—they are rightly invented and distributed, and I see no reason why I should dwell upon them.

Such then are the kinds of Method. Its parts are two; the one relating to the

[5] Arist. *Nic. Eth.* vi. 3. It is difficult to know why Bacon supposed Aristotle to allude to Democritus, as there is no reason to doubt the correctness of the received opinion that the allusion is to Plato's illustration of the nature of knowledge, which will be found at p. 197 of the *Theætetus*. On different occasions Aristotle blames those who in philosophical questions employ similitudes or comparisons; but it does not appear that in any such passage he refers to Democritus.

Mr. Munro, to whom I am indebted for the substance of this note, has pointed out to me the passage in Sextus Empiricus, *Adversus Logicos*, in which the opinion held by Democritus and others of the Physicists that "like is known of like" is mentioned. If any commentator has asserted that such a view of the nature of knowledge is condemned by Aristotle as would make it dependent upon this notion of ὁμοιότης, and that this notion was held by Democritus, we should get a probable explanation of the error into which Bacon seems to have fallen; but the simplest explanation is that he put the name of Democritus for that of Plato by mere inadvertence.

It may be remarked that Democritus might be charged not only with propounding a materialistic view of the nature of knowledge, but also with employing illustrations in support of it derived from material objects.

[6] Compare Plato, *Politic.* 277.

[7] See, for most of these terms, the *Rhetoric* of Ramus.

disposition of the whole work or argument of a book; the other to the limitation of propositions. For there belongs to architecture not only the frame of the whole building, but also the formation and shape of the several beams and columns thereof; and Method is as it were the architecture of the sciences. And herein Ramus merited better in reviving those excellent rules of propositions (that they should be true, universally, primarily, and essentially [8]), than he did in introducing his uniform method and dichotomies; and yet it comes ever to pass, I know not how, that in human affairs (according to the common fiction of the poets) "the most precious things have the most pernicious keepers." Certainly the attempt of Ramus to amend propositions drove him upon those epitomes and shallows of knowledge. For he must have a lucky and a happy genius to guide him who shall attempt to make the axioms of sciences convertible, and shall not withal make them circular, or returning into themselves. Nevertheless I must confess that the intention of Ramus in this was excellent.

There still remain two limitations of propositions, besides that for making them convertible; the one regarding their extension, the other their production. Certainly sciences, if a man rightly observe it, have, besides profundity, two other dimensions, namely latitude and longitude. The profundity relates to their truth and reality; for it is they which give solidity. As to the other two, the latitude may be accounted and computed from one science to another; the longitude from the highest proposition to the lowest in the same science. The one contains the true bounds and limits of sciences, that the propositions thereof may be handled properly, not promiscuously, and repetition, excursion, and all confusion may be avoided; the other prescribes the rule how far and to what degree of particularity the propositions of a science should be deduced. For certainly something must be left to exercise and practice; since we should avoid the error of Antoninus Pius and not be "splitters of cummin seeds" in the sciences, nor multiply divisions to extreme minuteness. Therefore it is plainly worth inquiry how we are to guide ourselves in this matter. For we see that too remote generalities (unless they be deduced) give little information, and do but offer knowledge to the scorn of practical men; being of no more avail for practice, than an Ortelius's universal map is to direct the way between London and York. Certainly the best sort of rules are not unfitly compared to mirrors of steel, where you may see the images of things, but not before they are polished; so rules and precepts will help if they be laboured and polished by practice, but not otherwise. But if these rules could be made clear and crystalline from the first, it were best; because there would then be less need of continual labour and practice. And so much for the science of method, which I have called the Wisdom of Transmission. And yet I must not omit to mention, that some persons, more ostentatious than learned, have laboured about a kind of method not worthy to be called a legitimate method, being rather a method of imposture, which nevertheless would no doubt be very acceptable to certain meddling wits. The object of it is to sprinkle little drops of a science about, in such a manner that any sciolist may make some show and ostentation of learning. Such was the Art of Lullius: such the Typocosmy traced out by some; being nothing but a mass and heap of the terms of all arts, to the end that they who are ready with the terms may be thought to understand the arts themselves. Such collections are like a fripper's or broker's shop, that has ends of everything, but nothing of worth [9].

[8] Καθόλου πρῶτον, κατὰ παντὸς, καθ' αὐτό, etc. These rules are in reality Ramus's own, though he professed to find them in Aristotle. They were however suggested to him by the fourth chapter of the first book of the *Posterior Analytics*. See the preface to *Valerius Terminus*.

[9] The fundamental idea of Lully's art, and of all similar methods, may be thus stated:—The propositions which in the aggregate make up the sum of human knowledge consist of combinations of a certain number of conceptions. If then we had a complete list of these conceptions so arranged as that all their admissible combinations could be obtained by a mechanical process, such a list would be virtually equivalent to a complete encyclopædia. Even an incomplete list would give a certain portion, greater or less according to circumstances, of all the knowledge which relates to the conceptions

CHAPTER III.

Of the foundations and office of Rhetoric. Three appendices of Rhetoric, which relate only to the Promptuary ; Colours of Good and Evil, *both Simple and Comparative ;* Antitheses of Things ; Lesser Forms of Speeches.

I NOW come to the doctrine concerning the Illustration of Discourse. This is that which is called Rhetoric, or Oratory ; a science certainly both excellent in itself, and excellently well laboured. Truly valued indeed, eloquence is doubtless in-

which enter into it. It is obvious that such a method can give no criterion of the truth of the propositions which it evolves ; but it may be so managed as that every proposition shall be intelligible. To take a very simple instance : I confine myself to a table consisting of three columns, the first column to consist of names of quadrupeds, as horse, stag, mouse etc. ; the second of adjectives, such as large, small, rare, etc. ; the third of names of classes of animals, as ruminant, rodent, and the like. With a few more such columns Lully would have said that the natural history of quadrupeds could be completely made out. Take any word from the first column, any word from the second, any word from the third, and connect them by the logical copula ; and if you are fortunate, you obtain a result as reasonable as this—" a mouse is a small rodent ". But of course it might have appeared that a horse was a ruminant.

Notwithstanding this obvious and incurable defect, different arrangements and modifications of the art were proposed by many writers, some of whom probably believed that it contained a key to all knowledge, while others believed that it would be at least useful as a means of arranging and suggesting to the mind all that could be said truly or falsely on a given subject. It appears to have suggested to Leibnitz one of his early tracts, that on the art of combination, and thus to have led him to his notion of reducing reasoning to a calculus. Analogous to Lully's art is a puerility which has recently been revived, namely, mechanical verse-making. It seems also to have suggested to Trithemius his method of secret writing, the fundamental idea of which may be explained by saying that if there were six and twenty animals in the first column of my table, the same number of adjectives in the second, and of classes in the third, each column might represent a complete alphabet, and the proposition " a mouse is a small rodent " would stand for a word of three letters. With more columns longer words might be spelt, etc., etc. It is obvious that in this case the truth or falsehood of the propositions used would be of little or no moment.

Lully's art was, it is said, revealed to him by an angel, after he had taken the resolution of giving up the world and of devoting himself to studies for which his previous way of life had unfitted him. Cornelius Agrippa, who had himself written an exposition of it, thus condemns it in the *De Vanit. et Incert. Scient.* c. 9. : " Hoc autem admonere vos oportet, hanc artem ad pompam ingenii et doctrinæ ostentationem potius quam ad comparandam eruditionem valere, ac longe plus habere audaciæ quam efficaciæ ". Though much cannot be said in favour of his method, yet Lully himself is one of the most remarkable persons of the middle ages. The story of his renouncing the world in consequence of the intense revulsion of feeling produced by the sudden extinction of a passionate love is well known ; whether authentic or not, it is a striking illustration of the solemn words of Peter Damiani : " Quid ergo sit caro doceat ipsa caro ". Lully says of himself : " I was married, I had begotten children, I was tolerably rich, I was wanton and worldly. All this with a willing mind did I forsake, that I might further God's glory and the public good, and exalt the holy faith ; I learnt Arabic ; many times went I forth to preach to the Saracens ; for the faith's sake I was made prisoner and kept in bonds and beaten ; forty and five years have I laboured to stir up the rulers of the Church and Christian princes to take heed to the public good ; now am I old, now am I poor, yet in the same mind still, by God's help, will so continue to my life's end." Accordingly he went again to Africa, and, preaching the Gospel, was on the feast of St. Peter and St. Paul stoned and left half-dead. Some Genoese merchants put him on board their ship and there he died, and was buried in his native island of Majorca in 1315. See Antonio, *Bibl. Hisp. Vet.* vol. ii. p. 123. See, with respect to Lully in general, and particularly as to the charge of heterodoxy made against him, Perroquet, *Apologie de la Vie et des Ecritz du bien heureux Raymond Lully.*

The foolish story, still occasionally repeated, of Raymond Lully having made gold for

ferior to wisdom. For what a distance there is between them is shown in the words spoken by God to Moses, when he declined the office assigned him on the ground that he was no speaker; "There is Aaron, he shall be thy speaker, thou shalt be to him as God"[1]. Yet in profit and in popular estimation wisdom yields to eloquence; for so Solomon says; "The wise in heart shall be called prudent, but he that is sweet of speech shall compass greater things"[2]; plainly signifying that wisdom will help a man to a name or admiration, but that it is eloquence which prevails most in action and common life. But as to the labouring of this art, the emulation of Aristotle with the rhetoricians of his time, and the eager and vehement zeal of Cicero doing his utmost to ennoble it, coupled with his long experience, has made them in their works on rhetoric exceed themselves. Again, those most brilliant examples of the art which we have in the orations of Demosthenes and Cicero, added to the perfection and skill of the precepts, have doubled the progression in it. And therefore the deficiencies which I shall note will rather be in some collections which may as handmaids attend the art, than in the rules and use of the art itself. For when in treating of Logic I made mention of a certain Promptuary or Preparatory Store, I promised to produce fuller examples of it in Rhetoric.

Notwithstanding, to open and stir the earth a little, according to my custom, about the roots of this science; Rhetoric is subservient to the imagination, as Logic is to the understanding; and the duty and office of Rhetoric, if it be deeply looked into, is no other than to apply and recommend the dictates of reason to imagination, in order to excite the appetite and will. For we see that the government of reason is assailed and disordered in three ways; either by the illaqueation of sophisms, which pertains to Logic; or by juggleries of words, which pertain to Rhetoric; or by the violence of the Passions, which pertains to Ethics. For as in negotiations with others, men are usually wrought either by cunning or by importunity, or by vehemency; so likewise in this negotiation within ourselves, we are either undermined by fallacies of arguments, or solicited and importuned by assiduity of impressions and observations, or agitated and transported by violence of passions. And yet the nature of man is not so unfortunately built, as that those arts and faculties should have power to disturb reason, and no power to strengthen or establish it; on the contrary they are of much more use that way. For the end of logic is to teach a form of argument to secure reason, and not to entrap it; the end likewise of moral philosophy is to procure the affections to fight on the side of reason, and not to invade it; the end of rhetoric is to fill the imagination with observations and images, to second reason, and not to oppress it. For abuses of arts only come in indirectly, as things to guard against, not as things to practise.

And therefore it was great injustice in Plato (though springing out of a just hatred of the rhetoricians of his time) to place rhetoric among arts voluptuary; resembling it to cookery, which did as much to spoil wholesome meats, as by variety and delicacy of sauces to make unwholesome meats more palatable[3]. But God forbid that speech should not be much more conversant in adorning that which is good, than in colouring that which is evil; for this is a thing in use everywhere; there being no man but speaks more honestly than he thinks or acts. And it was excellently noted by Thucydides as a censure passed upon Cleon, that because he used always to hold on the bad side, therefore he was ever inveighing against eloquence and grace of speech; as well knowing that no man can speak fair of courses sordid and base; while it is easy to do it of courses just and honourable[4]. For Plato said elegantly (though it has now grown into a commonplace) "that virtue, if she could be seen, would move great love and affection"[5]; and

Edward the Third, is sufficiently refuted by the date of his death, which occurred, according to authority which there is no reason to doubt, while Edward the Third was a child, and nearly thirty years before the coinage of the nobles said to have been made of Lully's gold. Camden is, I am afraid, responsible for the currency of the story, which in Selden's *Table Talk* seems to be transferred from Lully to Ripley.

[1] Exod. iv. 16. [2] Prov. xvi. 21. [3] Cf. Plato, *Gorgias*, p. 462, etc.
[4] Cf. Plato, *Phædrus*, p. 250. [5] Cf. Thucyd. iii. 42.

it is the business of rhetoric to make pictures of virtue and goodness, so that they may be seen. For since they cannot be showed to the sense in corporeal shape, the next degree is to show them to the imagination in as lively representation as possible, by ornament of words. For the method of the Stoics, who thought to thrust virtue upon men by concise and sharp maxims and conclusions, which have little sympathy with the imagination and will of man, has been justly ridiculed by Cicero [6].

Again, if the affections themselves were brought to order, and pliant and obedient to reason, it is true there would be no great use of persuasions and insinuations to give access to the mind, but naked and simple propositions and proofs would be enough But the affections do on the contrary make such secessions and raise such mutinies and seditions (according to the saying,

—— Video meliora proboque,
Deteriora sequor) [7]

that reason would become captive and servile, if eloquence of persausions did not win the imagination from the affections' part, and contract a confederacy between the reason and imagination against them. For it must be observed that the affections themselves carry ever an appetite to apparent good, and have this in common with reason ; but the difference is that affection beholds principally the good which is present ; reason looks beyond and beholds likewise the future and sum of all. And therefore the present filling the imagination more, reason is commonly vanquished and overcome. But after eloquence and force of persuasion have made things future and remote appear as present, then upon the revolt of imagination to reason, reason prevails.

Let us conclude therefore that rhetoric can be no more blamed for knowing how to colour the worse side, than logic for teaching how to make fine sophisms. For who does not know that the principle of contraries is the same, though the use be opposite ? It appears also that logic differs from rhetoric not only (as is commonly said) in that the one is like the fist, and the other like the open hand (that is, the one close, the other at large [8]) ; but much more in this, that logic handles reason in truth and nature, and rhetoric handles it as it is planted in the opinions of the vulgar. And therefore Aristotle wisely places rhetoric between logic on the one side, and moral and civil knowledge on the other, as participating of both [9]. For the proofs and demonstrations of logic are the same to all men ; but the proofs and persuasions of rhetoric ought to differ according to the auditors ; so that like a musician accommodating his skill to different ears, a man should be

Orpheus in silvis, inter delphinas Arion [10] ;

which application and variety of speech, in perfection of idea, ought to extend so far, that if a man should speak of the same thing to several persons, he should nevertheless use different words to each of them ; though this politic and familiar part of eloquence in private discourse it is certain that the greatest orators commonly want ; while in observing their well graced forms of speech, they lose that volubility of application, and those characters of style, which it would be better to use in addressing different individuals. And therefore it will not be amiss to recommend this of which I now speak to fresh inquiry, and calling it by the name of *The Wisdom of Private Discourse* to set it down among the deficients ; being a thing which the more it is considered the more it will be valued. But whether it be placed in rhetoric or in policy, is a matter of little moment.

[6] Cicero, *De Fin.* iv. 18 and 19.

[7] Ovid. *Metam.* vii. 20 :—

The better course I know and well approve ;
The worse I follow.

[8] Cf. Cicero, *De Fin.* ii. 17.

[9] Arist. *Rhet.* i. 2.

[10] Virg. *Ecl.* viii. 56 :—

Orpheus by land the trees about him bringing,
By sea, Arion borne to the dolphins singing.

Let us now descend to the deficiencies in this art, which (as I said before) are rather as appendices than parts of the art itself, and all belong to the Promptuary. First therefore I do not find the wisdom and diligence of Aristotle well pursued and supplied. For he began to make a collection of *the popular signs or colours of apparent good and evil*, both simple and comparative; which are really the sophisms of rhetoric. Now these are of excellent use, especially for business and the wisdom of private discourse. But the labours of Aristotle [11] regarding these colours are in three points defective; one, that he recounts a few only out of many; another, that he does not add the answers to them; and the third, that he seems to have conceived but a part of the use of them. For their use is not more for probation than for affecting and moving. For there are many forms which, though they mean the same, yet affect differently; 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. Certainly there is no man who will not be more affected by hearing it said, "Your enemies will be glad of this,"

Hoc Ithacus velit, et magno mercentur Atridæ [12],

than by hearing it said only, "This will be evil for you". Therefore these points and stings of words are by no means to be neglected. But as I set this down as deficient, I will according to my custom support it by examples; for precepts would not give a sufficient illustration of the thing.

Examples *of the Colours of Good and Evil, both Simple and Comparative.*

SOPHISM.

1. *What men praise and honour is good; what they dispraise and condemn is evil.*

ANSWER.

This Sophism deceives in four ways; by reason of ignorance, of bad faith, of party spirit and factions, of the natural disposition of those who praise and blame. By reason of ignorance; for what is popular judgment worth as a test of good and evil? Better was Phocion's inference, who when the people applauded him more than usual, asked whether he had done wrong [13]. By reason of bad faith, because in praising and blaming, men are commonly thinking of their own business, and not speaking what they think.

Laudet venales, qui vult extrudere, merces [14].

And again; "It is naught, it is naught (says the buyer); but when he is gone his way, he will vaunt" [15]. By reason of factions; for any man may see that men are wont to exalt those of their own party with immoderate praises, and depress below their desert those of the contrary. By reason of natural disposition; for some men are by nature formed and composed for servile adulation, while others on the contrary are crabbed and captious; so that in praising and blaming they do but gratify their own dispositions, with little regard to truth.

SOPHISM.

2. *What is praised even by enemies, is a great good; but what is reproved even by friends, is a great evil.*

This Sophism appears to rest on the ground that that which we speak unwillingly and against our wish and inclination may be supposed to be wrung from us by the force of truth.

ANSWER.

This Sophism deceives by reason of the cunning as well of enemies as of friends. For enemies sometimes bestow praise, not against their will, nor as being com-

[11] Arist. *Rhetoric*, i. 6 and 7.

[12] Virg. *Æn.* ii. 104:—
This would Ulysses wish, and Atreus' sons
Give much to hear of.

[13] Plutarch. in Phocion, c. 8.

[14] Hor. *Ep.* ii. 2. 11.:—The merchant praises what he wants to sell.

[15] Proverbs, xx. 14.

pelled thereto by the force of truth, but choosing such points for praise as may breed envy and dangers to the subjects of it. And hence there was a prevailing superstition amongst the Greeks, that when a man was praised by another with a malicious purpose to injure him, a pimple would grow upon his nose. It deceives likewise, because enemies sometimes bestow praises merely by way of preface, that they may afterwards calumniate more freely and maliciously. On the other hand, this Sophism deceives also by reason of the cunning of friends. For they too are wont sometimes to acknowledge and proclaim the faults of their friends, not because truth compels them, but choosing such faults as may do them least injury; as if in other respects they were excellent men. It deceives again, because friends also use reprehensions (as I have said that enemies bestow praises) by way of prefaces, whereby they may presently be the more large in commendation.

SOPHISM.

3. *That which it is good to be deprived of, is in itself an evil; that which it is bad to be deprived of, is in itself a good.*

ANSWER.

This Sophism deceives in two ways, by reason either of the comparative degrees of good and evil, or of the succession of good to good, or evil to evil. By reason of comparison: if it was for the good of mankind to be deprived of acorns as food, it does not follow that that food was bad; acorns were good, but corn is better [16]. Nor if it was bad for the Syracusans to be deprived of the elder Dionysius, does it follow that he was good, but that he was not so bad as Dionysius the younger. By reason of succession:—for when a good thing is taken away it is not always succeeded by a bad thing, but sometimes by a greater good; as when the flower falls and the fruit succeeds. Neither when a bad thing is taken away is it always succeeded by a good thing, but sometimes by a worse. For by the removal of his enemy Clodius, Milo lost the "seedbed of his glory" [17].

SOPHISM.

4. *That which approaches to good or evil, is itself good or evil; but that which is remote from good is evil, that from evil, good.*

It is commonly found that things which agree in nature are placed together, and that things of a contrary nature are placed apart; for everything delights to associate with itself that which is agreeable, and to repel that which is disagreeable.

ANSWER.

But this Sophism deceives in three ways; by reason, 1st of destitution, 2ndly of obscuration, and 3rdly of protection. By reason of destitution; for it happens that those things which are most abundant and excellent in their own kind attract everything as far as may be to themselves, spoiling and as it were starving all things in their neighbourhood. Thus you will never find flourishing underwood near great trees. And rightly was it said "that the servants of a rich man are the greatest slaves". So also the lower order of courtiers were pleasantly compared to the vigils of festivals, that are next the feast days, but are themselves devoted to fasting. By reason of obscuration; for all things that are excellent in their own kind have this,—that though they do not impoverish and starve the things next to them, yet they obscure and overshadow them; as astronomers remark of the sun, that it is good in aspect, but evil in conjunction and approximation. By reason of protection; for it is not only for consort and similarity of nature that things unite and collect together; but evil also (especially in civil matters) betakes itself to good for concealment and protection. And hence male-

[16] The allusion is to the following lines:—

"Prima Ceres ferro mortales vertere terram
Instituit, cum jam glandes atque arbuta sacræ
Deficerent silvæ, et victum Dodona negaret."—Virg. *Georg.* i. 147.

[17] Cicero, *Pro. Mil.* 36.

factors seek the protection of sanctuaries, and vice itself resorts to the shadow of virtue;

Sæpe latet vitium proximitate boni[18].

So on the other hand good draws near to evil, not for company, but to convert and reform it. And therefore physicians attend more on the sick than the healthy; and it was objected to our Saviour that he conversed with publicans and sinners.

SOPHISM.

5. *That to which the other parties or sects agree in giving the second place (each putting itself first) seems to be the best; for it seems that in taking the first place they are moved by zeal and partiality, but in bestowing the second by truth and merit.*

So Cicero argues that the sect of the Academics, which maintained the impossibility of comprehending truth, was the best of the philosophies. "For (said he) ask a Stoic which is the best philosophy, and he will prefer his own to the rest; then ask him which is the next best, and he will acknowledge the Academic. So again the Epicurean (who will hardly deign to look at a Stoic), after he has placed his own philosophy at the head, will place the Academic next"[19]. In like manner when a place is vacant, if the prince were to ask each candidate whom he would most recommend next to himself, it is probable that their second votes would meet in the most able and deserving man.

ANSWER.

This Sophism deceives by reason of envy. For next to themselves and their own party, men generally incline to those who are weakest and least formidable, and have given them least trouble; in despite of those who have most insulted or inconvenienced them.

SOPHISM.

6. *That which is better in perfection, is better altogether.*

To this belong the common forms; "Let us not wander in generalities," "Let us compare particular with particular," etc.

ANSWER.

This Sophism appears forcible enough, and rather logical than rhetorical; but still it is sometimes deceptive. First, because there are not a few things which are very much exposed to danger, yet if they escape prove excellent; so that in kind they are inferior, as being oftener imperilled and lost, but individually they are more noble. Of this kind is a blossom in March, whereof the French proverb says: "A March blossom, and a Paris child, if one of them survive, it is worth ten others"[20]. So that generally the blossom of May is superior to the blossom of March; but yet individually the best blossom of March is preferred to the best of May. It deceives secondly, by reason of the nature of things being more equal in some kinds or species, and more unequal in others; as it has been remarked that in general the hotter climates produce the sharper wits; but then the best wits of the colder climates surpass the sharpest of the hotter. So again in many armies if the matter were tried by duel between two champions, the victory would go on the one side, if by the whole army, on the other. For excellencies and superiorities are casual; whereas kinds are governed by nature or discipline. In kind again, metal is more precious than stone; but yet a diamond is more precious than gold.

SOPHISM.

7. *That which keeps the matter open, is good; that which leaves no opening for retreat, is bad. For not to be able to retreat is to be in a way powerless; and power is a good.*

[18] Ovid, *De Art. Amand.* ii. 262:—Vice often lurks 'neath Virtue's shade.

[19] Cf. the fragment of the *Academ. ad Varr.* preserved by St. Augustine.

[20] Bourgeon de Mars, enfant de Paris,
Si un eschape, il en vaut dix.

Hence Æsop derived the fable of the two frogs, who in a great drought, when water was everywhere failing, consulted together what was to be done. The first said, "Let us leap down into a deep well, since it is not likely that the water will fail there." But the other rejoined, "Yes, but if it chance that the water fail there also, how shall we be able to get up again?" And the ground of this Sophism is, that human actions are so uncertain and subject to such risks, that that appears the best course which has the most passages out of it. To this belong those forms which are in use,—"You will tie your hands and engage yourself," "You will not be free to take what fortune may offer," etc.

ANSWER.

This Sophism deceives, first because in human actions fortune insists that some resolution shall be taken. For, as it was prettily said by some one, "not to resolve is itself to resolve"; so that many times suspension of resolution involves us in more necessities than a resolution would. And it seems to be the same disease of mind which is found in misers, only transferred from the desire of keeping money to the desire of keeping freedom of will and power. For as the miser will enjoy nothing, because he will not diminish his store, so this kind of sceptic will execute nothing, because he will still keep all in his own hands. It deceives secondly, because necessity, and the casting of the die (as they call it), is a spur to the courage; as one says, "Being a match for them in the rest, your necessity makes you superior" [21].

SOPHISM.

8. *The evil which a man brings on himself by his own fault is greater; that which is brought on him by external causes, is less.*

The reason of this is that the sting of conscience doubles adversity, while on the other hand the being conscious that a man is clear and free from fault affords great consolation in calamity. And therefore the poets most exaggerate those sufferings, as coming near to despair, where a man accuses and torments himself;

Seque unum clamat, causamque caputque malorum [22].

On the other hand the calamities of worthy persons are lightened and tempered by the consciousness of innocence and merit. Besides when the evil is inflicted by others, a man has something that he may freely complain of, whereby his griefs evaporate and do not suffocate the heart. For in things which come from human injury, we are wont to feel indignation, or to meditate revenge, or to implore, or if not to implore yet to expect, providential retribution; and even if the blow come from fortune, yet is there left a kind of expostulation with the fates themselves;

Atque Deos, atque astra vocat crudelia mater [23].

Whereas if the evil be derived from a man's own fault, the stings of pain strike inward, and more wound and lacerate the heart.

ANSWER.

This Sophism deceives, first by reason of hope, the great antidote of evils. For amendment of a fault is often in our power, but amendment of fortune is not. Hence Demosthenes more than once addressed his countrymen in words like these: "That which, having regard to the time passed, is the worst point and circumstance of all the rest, that as to the time to come is the best. What is that? Even this; that it is your own sloth, irresolution, and misgovernment that have brought your affairs into this ill condition. For had you ordered your means and forces to the best and done your parts every way to the full, and notwithstanding your matters had gone backwards as they do, there had been no hope

[21] Livy, iv. 28.

[22] Virg. *Æn.* xii. 600:—And on herself cries out, as cause of all. Bacon alters the original, which runs:—

Se causam clamat crimenque caputque malorum.

[23] Virg. *Eclog.* v. 23:—And she upbraids the gods and cruel stars.

left of recovery or reparation. But since it has been brought about chiefly by your own errors, you may fairly trust that by amending them you will recover your former condition "[24]. So Epictetus discoursing on the degrees of mental tranquillity, puts those lowest who accuse others next those who accuse themselves, and highest of all those who accuse neither others nor themselves[25]. It deceives secondly, by reason of the innate pride of men's minds, which makes them unwilling to acknowledge their own errors. This to avoid, they exercise far more patience in bearing those ills which they have brought on themselves by their own fault. For as we see that when a fault is committed and it is not yet known who is to blame, men are exceeding angry and make much ado about it; but if afterwards it come out that it was done by a son or a wife or a favourite, all is at once hushed and no more noise made; so it is when anything happens for which we must needs take the blame upon ourselves; as we see it very often in women, that if they have done anything against the wishes of their parents and friends, and it turn out ill, whatever misfortune follows they will keep it to themselves and set a good face upon it[26].

SOPHISM.

9. *From something to nothing appears a greater step than from more to less; and again from nothing to something appears a greater step than from less to more.*

It is a rule in mathematics that there is no proportion between nothing and something; and therefore the degrees of nullity and quiddity appear greater than the degrees of increase and decrease. Thus the loss of an eye is harder for a man with only one eye than for a man with two. In like manner if a man has several children, it is more grief to him to lose the last surviving son than all the rest. Hence also the Sibyl, when she had burned her two first books, doubled the price of the third; for the loss of this would have been a degree of privation, and not of diminution.

ANSWER.

This Sophism deceives, first in respect of those things whereof the use consists in a sufficiency or competency, that is in a determinate quantity. For if a man were bound by penalty to pay a certain sum of money on a stated day, it would be worse for him to be one pound short, than (supposing that that one could not be got) to be short by ten pounds more. So in the wasting of fortunes, the degree of debt which makes the first inroad on the capital seems worse than the last which reduces to beggary. To this belong the common forms; "Sparing comes too late when all is gone"[27]; "as good never a whit as never the better," etc. It deceives secondly, in respect of that principle of nature, that the decay of one thing is the generation of another[28]; so that the degree of extreme privation is sometimes of less disadvantage, because it gives a handle and stimulus to some new course. Hence also Demosthenes often complains to his countrymen; "That the terms which they accepted from Philip, not being profitable nor honourable, were nothing else than aliments of their sloth and indolence; which they would be much better without; because then their industry might be better excited to seek other remedies"[29]. I knew a physician that when delicate women com-

[24] Cf. Demosth. *Philipp.* i. and iii.
[25] Epict. *Enchirid.* c. 5.
[26] Bacon makes the same remark in the Essay on Marriage.
[27] Cf. Erasm. *Adag.* ii. 2. 64; and Hesiod. *Op. et Dies*, 339.
[28] Arist. *De Gen. et Corr.* i. 4.
[29] Olynth. iii. 33. Wats refers to the first Philippic, towards the end of which there is a passage not unlike that in the text; but the phrase "alimenta socordiæ," which Bacon has quoted in several parts of his works, is not to be found there. He derived it from H. Wolf's translation of a passage in the third Olynthiac, c. 33., where the Greek is simply ἔστι ταῦτα τὰ τὴν ἑκάστου ῥᾳθυμίαν ὑμῶν ἐπαυξάνοντα, which Wolf renders by "alimenta sunt vestrûm omnium socordiæ." There is no reference to Philip's conduct in the immediate context, the "alimenta socordiæ" being in reality matters of internal arrangement. It seems as if Bacon read the oration in Wolf's version, and adopted the phrase "alimenta socordiæ" (the point of which belongs to the translator and not to

plained that they were ill and yet could not endure to take any medicine, would say to them, not less wittily than sharply, "Your only way is to be worse, for then you will be glad of any medicine." Moreover this degree of privation or extreme want may be useful not only to stimulate energy, but also to enforce patience.

With regard to the second part of this Sophism, it rests on the same foundation as the former (that is on the degrees of nullity and quiddity). Hence the making of a beginning of anything is thought so great a matter:—

Dimidium fact, qui bene cœpit, habet, etc.[30].

Hence also the superstition of astrologers, who make a judgment of the disposition and fortune of a man from the point or moment of his nativity or conception.

ANSWER.

This Sophism deceives first because in some cases the first beginnings of things are no more than that what Epicurus in his philosophy calls *tentamenta*[31], that is imperfect offers and essays, which are nothing unless they be repeated or proceeded with. Therefore in this case the second degree seems more worthy and more powerful than the first, as the wheel-horse in a cart does more work than the leader. Again, it is not a bad saying "that it is the second word which makes the fray." For perhaps the first would have passed. And so the one made a beginning of the mischief, but the other prevented it from coming to an end. It deceives secondly, by reason of the dignity of perseverance; which lies in the progress, not in the first attempt. For chance or nature may give the first impulse, but only a settled affection and judgment can give constancy. It deceives thirdly, in those things whereof the nature and ordinary course goes against the beginning made; so that the first start is ever being frustrated unless the force be kept up; according to the common forms; "Not to advance, is to retreat"; "He who is not gaining, is losing"; as in running up hill, and rowing against stream. But on the other hand, if the motion be down hill, or the rowing be down stream, then the degree of inception is of far greater importance. Besides, this colour extends not only to the degree of inception, which proceeds from power to act, compared with the degree from act to increase; but also to the degree from impotency to power, compared with the degree from power to act. For the degree from impotency to power seems greater than from power to act.

SOPHISM.

10. *That which has relation to truth is greater than that which has relation to opinion; and the proof that a thing has relation to opinion is this: it is that which a man would not do if he thought it would not be known.*

So the Epicureans say of the Stoics' Felicity placed in virtue, that it is like the felicity of a player, who if he were left of his auditory and their applause, would straight be out of heart and countenance. And therefore in derision they call virtue a theatrical good. But it is otherwise in riches, of which it is said,

Populus me sibilat; at mihi plaudo[32].

And likewise of pleasure,

—— Grata sub imo
Gaudia corde premens, vultu simulante pudorem[33].

Demosthenes) without comparing it with the original. [I think, however, that the idea of "alimenta" is really involved in the word ἐπαυξάνοντα, when taken with the context and that no other word could have given the meaning so well. . . .—*J. S.*]

[30] Hor. *Ep.* i. 2. 40:—Well begun is half done. [31] Cf. Lucretius, v. 835.

[32] Hor. *Sat.* i. 1. 66:—The people hiss me, but I applaud myself.

[33] Her face said fie, for shame; but sweet delight
Possessed her heart in secret.

[A quotation from the Latin translation of Theocritus (*Id.* xxvii.) by Hessus (Paris, 1546).

ANSWER.

The fallacy of this Sophism is somewhat more subtle ; though the answer to the example alleged is easy. For virtue is not chosen for the sake of popularity ; since it is a precept that a man should above all things reverence himself [34]. So that a good man will be the same in solitude as on the stage ; though perhaps his virtue may be somewhat strengthened by praise, as heat is increased by reflexion. This however denies the supposition and does not refute the fallacy. Now the answer is this. Allow that virtue (especially such as is attended with labours and conflicts) would not be chosen, except for the sake of the glory and fame accompanying it ; yet it does not therefore follow that the motive and appetite to virtue is not principally for its own sake ; for fame may only be the impulsive cause, or *sine qua non*, and not the efficient or constituent cause. For instance ; if there were two horses, and one of them without the spur could do well, but the other with the spur could do much better, the latter should in my judgment bear off the prize and be accounted the better horse. And to say " Tush, the life of this horse is in the spur," would not move any man of sound judgment ; for since the ordinary instrument of horsemanship is the spur, and that it is no manner of burden or impediment to the rider, the horse that is quickened with the spur is not therefore to be less valued ; nor again is the other that does wonderfully well without the spur to be reckoned on that account the better, but only the finer and daintier. So glory and honour are the spurs of virtue ; and though virtue would somewhat languish without them, yet as they are always at hand to attend virtue, even when not invited, there is no reason why virtue may not be sought for its own sake as well. And thus the proposition that " a thing which is chosen for opinion's sake and not for truth may be known by this—it is what a man would not do if he thought it would not be known," is rightly answered.

SOPHISM.

11. *That which is gained by our own merit and industry is a greater good ; that which is derived from the kindness of others or from the indulgence of fortune a lesser good.*

The reasons of this are,—first, because there is better hope of the future ; for in the favours of others or the good winds of fortune there is little certainty ; but our own virtue and industry are ever with us ; so that after we have obtained some good in this way we have always the same instruments ready to use again ; yea, and by habit and success made more effective. Secondly, because for what we get by the favour of other men we are other men's debtors ; whereas what we obtain of ourselves carries no obligation with it. Nay, even when divine mercy has bestowed any favour on us, it demands a kind of retribution to the goodness of God, which is distressing to depraved and wicked men ; whereas in the former kind, that comes to pass which the prophet speaks of, " Men rejoice and exult, they sacrifice unto their net, and burn incense unto their drag [35] ". Thirdly, because what proceeds not by our own merit, carries with it no praise or reputation ; for felicity begets a kind of admiration, but not praise. As Cicero said to Cæsar ; " We have enough to admire, we are looking for something, to praise [36] ". Fourthly, because the things obtained by our own industry are generally achieved by labour and exertion, which have some sweetness in themselves ; as Solomon says, " Meat taken in hunting is sweet " [37].

[34] Pythag. *Aur. Vers.* v. 12. :—πάντων δὲ μάλιστ' αἰσχύνεο σαυτόν.

[35] Habakkuk, i. 15, 16.

[36] Cicero, *Pro Marcello*, c. 9. The quotation is inaccurate, though the meaning is preserved.

[37] In the *Colours of Good and Evil*, of which this tract is only an expansion, this sentence is given in Latin as here, but without any reference to Solomon. There are one or two of Solomon's proverbs to the same purpose, but none I think in these words. It was probably suggested to Bacon by something in Solomon, and turned into its present shape by himself. In after years, remembering where the thought came from, he may easily have forgotten that the expression was his own.—*J. S.*

ANSWER.

To these there are four opposing Sophisms, which incline to the contrary side, and may respectively serve as refutations to the former. The first is that felicity seems to be a kind of sign and character of the divine favour; which both creates confidence and alacrity in ourselves, and wins obedience and respect from others. And this felicity extends to casual things, to which virtue hardly aspires as when Cæsar to encourage the pilot said, "You carry Cæsar and his fortune" [38]; whereas if he had said, "You carry Cæsar and his virtue", it would have been but cold comfort against the dangers of a storm. The second is that the deeds of virtue and industry are imitable and open to others; whereas felicity is inimitable, and a kind of prerogative of the individual man. Hence we generally see that natural things are preferred to artificial, because they admit not of imitation; for whatever is imitable is potentially common. The third is that things which come of felicity appear free gifts, bought without toil; but things gained by our own virtue seem as paid for. Therefore Plutarch said elegantly, in comparing the actions of Timoleon, a man eminently fortunate, with those of his contemporaries Epaminondas and Agesilaus, "That they were like the verses of Homer, which, as they excel in other respects, so they seem to flow naturally, and as it were at the inspiration of genius [39]." The fourth is that which happens contrary to hope and expectation comes more gratefully and with greater pleasure to men's minds; but this cannot be the case with things effected by our own care and exertion.

SOPHISM.

12. *That which consists of many divisible parts is greater than that which consists of few parts and is more one; for all things when viewed part by part appear greater; whence likewise plurality of parts makes a show of magnitude; but it has a greater effect if the parts be without order; for it produces a resemblance to infinity and prevents comprehension.*

The fallacy here is very palpable, even at first sight; for it is not the plurality of parts alone, but the majority of them, which make the total greater. But yet this Sophism often carries away the imagination; yea, and deceives the sense. For to the sight it appears a shorter distance on a dead level, where nothing intervenes to break the view, than when there are trees and buildings or some other mark to divide and measure the space. So again when a great monied man has divided and distributed his chests and bags, he seems to himself richer than he was. So likewise in amplifications, the effect is increased if the whole be divided into many parts and each be handled separately. And if this be done without order and promiscuously, it fills the imagination still more; for confusion gives an impression of multitude; inasmuch as things set forth and laid out in order, both appear more limited in themselves, and make it evident that nothing has been omitted; whereas things that are presented confusedly are not only thought to be numerous in themselves, but leave room for suspicion that there are many more behind.

ANSWER.

This Sophism deceives, first when a man is prepossessed with an opinion that a thing is greater than it really is. For then the distribution thereof will destroy that false opinion, and show it in its true dimensions, without amplification. And therefore if a man be in sickness or pain, the hours will seem longer without a clock or an hour-glass than with it. For if the weariness and pain of disease makes time appear longer than it really is, then the computation of time corrects the error, and makes it appear shorter than had been conceived by the false opinion. So again in the dead plain, the contrary to that which I said just now sometimes happens. For though at first the eye represents the distance to the sense as shorter, because it is undivided; yet if that give an impression of a much shorter distance than it is afterwards found to be, the disappointment of that false opinion will make it appear longer than it really is. Therefore if a man have an over great opinion of anything and you wish to make it still greater, you must

[38] Plutarch, *De Fortunâ Roman.* p. 319. [39] Plutarch. in Timol. c. 36.

beware of distributions, but extol it in the whole. The Sophism deceives secondly, when the distribution is distracted and scattered, and does not meet or strike the eye at one glance. Thus if flowers in a garden be divided into many beds, they will give the appearance of a greater number than if they were all growing in one bed, provided that all the beds can be seen at once; for otherwise the union will have more effect than the scattered distribution. So again men's revenues seem greater when their farms and properties lie near and contiguous; for if they lie scattered they do not so easily come under view. The Sophism deceives, thirdly, by reason of the superiority of unity to multitude. For all piecing together of things is a sure sign of poverty in the pieces; where it comes to that,

Et quæ non prosunt singula, multa juvant[40].

Therefore Mary's was the better part,—"Martha, Martha, thou art busy about many things, one thing sufficeth[41]". Hence the fable in Æsop of the fox and the cat. For the fox boasted how many tricks and shifts he had to escape the hounds; but the cat said she had only one help to rely on; which was the poor faculty of climbing a tree; yet this was a far better protection than all the fox's tricks; whence the proverb, "The fox knows many tricks, but the cat one good one[42]". And in the moral signification of this fable we see the same thing. For the support of a powerful and faithful friend is a surer protection than all manner of plots and tricks.

These then shall suffice for an example. I have by me indeed a great many more Sophisms of the same kind, which I collected in my youth; but without their illustrations and answers, which I have not now the leisure to perfect; and to set forth the naked colours without their illustrations (especially as those above given appear in full dress) does not seem suitable. Be it observed in the meantime that this matter, whatever may be thought of it, seems to me of no small value; as that which participates of Primary Philosophy, of Politics, and of Rhetoric. And so much for the Popular Signs or Colours of Apparent Good and Evil, both simple and comparative.

The second Collection, which belongs to the *Promptuary* or Preparatory Store, is that to which Cicero alludes (as I said above in treating of Logic), where he recommends the orator to have commonplaces ready at hand, in which the question is argued and handled on either side: such as "for the letter of the law", "for the intention of the law," etc. But I extend this precept to other cases; applying it not only to the judicial kind of oratory, but also to the deliberative and demonstrative. I would have in short all topics which there is frequent occasion to handle (whether they relate to proofs and refutations, or to persuasions and dissuasions, or to praise and blame) studied and prepared beforehand; and not only so, but the case exaggerated both ways with the utmost force of the wit, and urged unfairly, as it were, and quite beyond the truth. And the best way of making such a collection, with a view to use as well as brevity, would be to contract those commonplaces into certain acute and concise sentences[43]; to be as skeins or bottoms of thread which may be unwinded at large when they are wanted. Some such piece of diligence I find in Seneca[44], but in hypotheses or cases. A few instances of the thing, having a great many by me, I think fit to propound by way of example. I call them *Antitheses of Things*[45].

[40] Ovid. *Rem. Amor.* 420:—Things of no good separate, are useful together.

[41] St. Luke, x. 41, 42.

[42] Cf. Erasmus, *Adag.* i. 5. 18.

[43] The habit of reducing arguments into this form accounts probably for the difficulty of verifying many of Bacon's quotations. The form fittest for the *promptuaria* was the form easiest to remember and most convenient to use.—*J. S.*

[44] The Seneca here referred to is M. Annæus Seneca, the rhetorician, who is supposed to have been the uncle of L. Annæus Seneca, the preceptor of Nero.

[45] Of these Antitheta many are Bacon's own, and are to be found in other parts of his writings; others are doubtless quotations, of which I shall mention some, though many more might probably be easily pointed out. [A great many of them will be found in the *Essays*.—*J. S.*]

Examples of *Antitheses*.

I. Nobility.

For.

They whose virtue is in the stock cannot be bad even if they would.

Nobility is the laurel with which Time crowns men.

We reverence antiquity even in dead monuments; how much more in living ones?

If you regard not nobility of birth, where will be the difference between the offspring of men and brutes?

Nobility withdraws virtue from envy, and makes it gracious.

Against.

Seldom comes nobility from virtue; seldomer virtue from nobility.

Noblemen have to thank their ancestors for pardon oftener than for advancement.

New men are commonly so diligent, that noblemen by their side look like statues.

Noblemen look behind them too often in the course; the mark of a bad runner.

II. Beauty.

For.

Deformed persons commonly take revenge on nature.

Virtue is nothing but inward beauty; beauty nothing but outward virtue.

Deformed persons seek to rescue themselves from scorn—by malice.

Beauty makes virtues shine, and vices blush.

Against.

Virtue is like a rich stone, best plain set.

As a fair garment on a deformed body, such is beauty in a bad man.

They that are beautiful and they that are affected by beauty are commonly alike light.

III. Youth.

For.

First thoughts and young men's counsels have more of divineness.

Old men are wiser for themselves, not so wise for others and for the commonwealth.

Old age, if it could be seen, deforms the mind more than the body.

Old men are afraid of everything except the Gods.

Against.

Youth is the seedbed of repentance.

There is implanted in youth contempt for the authority of age; so every man must grow wise at his own cost.

The counsels to which Time is not called, Time will not ratify.

In old men the Loves are changed into the Graces.

IV. Health.

For.

The care of health humiliates the mind and makes it the beggar of the body.

A healthy body is the soul's host, a sick body her gaoler.

Nothing forwards the conclusion of business so much as good health; weak health on the contrary takes too many holidays.

Against.

Often to recover health, is often to renew youth.

Ill health is a good excuse for many things; which we are glad to use even when well.

Good health makes too close an alliance between the soul and the body.

Great empires have been governed from bed, great armies commanded from the litter.

V. Wife and Children.

For.

Love of his country begins in a man's own house.

Against.

He that has wife and children has given hostages to fortune.

A wife and children are a kind of discipline of humanity; whereas unmarried men are harsh and severe.

To be without wife or children is good for a man only when he wants to run away.

He who begets not children, sacrifices to death.

They that are fortunate in other things are commonly unfortunate in their children; lest men should come too near the condition of Gods.

Man generates and has children; God creates and produces works.

The eternity of brutes is in offspring; of men, in fame, good deserts, and institutions.

Domestic considerations commonly overthrow public ones.

Some persons have wished for Priam's fortune, who survived all his children [46].

VI. Riches.

For.

They despise riches who despair of them.

It is envy of riches that has made virtue a goddess.

While philosophers are disputing whether virtue or pleasure be the proper aim of life, do you provide yourself with the instruments of both.

Virtue is turned by riches into a common good.

Other goods have but a provincial command; only riches have a general one.

Against.

Of great riches you may have either the keeping, or the giving away, or the fame; but no use.

Do you not see what feigned prices are set upon little stones and such rarities, only that there may be some use of great riches?

Many men while they thought to buy everything with their riches, have been first sold themselves.

I cannot call riches better than the baggage of virtue; for they are both necessary to virtue and cumbersome.

Riches are a good handmaid but the worst mistress.

VII. Honours.

For.

Honours are the suffrages not of tyrants (as they are said to be), but of divine providence.

Honours make both virtues and vices conspicuous; therefore they are a spur to the one and a bridle to the other.

No man can tell how far his virtue will go unless honours give him a fair field.

Virtue, like all things else, moves violently to her place, calmly in her place; now the place of virtue is honour.

Against.

While we seek honours we lose liberty.

Honours commonly give men power over those things wherein the best condition is not to will, the next best not to can.

The rising to honours is laborious, the standing slippery, the descent headlong.

Great persons had need to borrow the opinions of the vulgar, to think themselves happy.

VIII. Empire.

For.

The enjoyment of happiness is a great good; but the power of imparting it to others is a still greater.

Kings are not as men, but as the stars; for they have great influence both on individuals and on the times themselves.

To resist the vice-gerent of God is not treason, but a kind of theomachy.

Against.

How wretched to have nothing to desire, and everything to fear!

Kings are like the heavenly bodies, which have much veneration but no rest.

None of human condition is admitted to the banquets of the Gods unless it be in derision.

[46] The allusion is to Tiberius. See Sueton. in Tiber. c. 62.

IX. Praise, Reputation.

For.

Praise is the reflexion of virtue.

Praise is the honour that comes by free votes.

Honours are conferred by many forms of government; but praise comes everywhere of liberty.

The voice of the people has something divine; else how could so many agree in one thing?

Marvel not if the vulgar speak truer than the great, for they speak safer.

Against.

Fame is a worse judge than messenger.

What has a good man to do with the slaver of the common people?

Fame is like a river, it bears up the light and lets the solid sink.

The lowest virtues are praised by the common people, the middle are admired; but of the highest they have no sense of perception.

Praise is won by ostentation more than by merit, and follows the vain and windy more than the sound and real.

X. Nature.

For.

Custom advances in an arithmetical ratio, nature in a geometrical.

As common laws are to customs in states, such is nature to custom in individuals.

Custom against nature is a kind of tyranny, and is soon and upon slight occasions overthrown.

Against.

We think according to our nature, speak as we have been taught, but act as we have been accustomed.

Nature is a schoolmaster, custom a magistrate.

XI. Fortune.

For.

Overt and apparent virtues bring forth praise; secret and hidden virtues bring forth fortune.

Virtues of duty bring forth praise; virtues of ability bring forth fortune.

Fortune is like the Milky Way; a cluster of obscure virtues without a name.

Fortune is to be honoured if it be but for her daughters, Confidence and Authority.

Against.

The folly of one man is the fortune of another.

The best that can be said of fortune is that, as she uses no choice in her favours, so she does not care to uphold them.

Great men, to decline the envy of their own virtues, turn worshippers of fortune.

XII. Life.

For.

It is absurd to prefer the accidents of life to life itself.

A long course is better than a short one for everything, even for virtue.

Without a good space of life a man can neither finish, nor learn, nor repent.

Against.

Philosophers in making such preparations against death make death itself appear more fearful.

Men fear death, as children fear to go into the dark, because they know not what is there.

There is no human passion so weak but if it be a little roused it masters the fear of death.

A man might wish to die, though he were neither brave nor miserable nor wise, merely from weariness of being alive[47].

[47] Seneca, *Ep.* 77.

XIII. Superstition.

For.

They that err from zeal, though we cannot approve them, yet we must love them.

Mediocrities belong to matters moral; extremities to matters divine.

The religious man is called superstitious. I had rather believe the most monstrous fables that are to be found in any religion, than that this world was made without a deity.

Against.

As the likeness of an ape to a man makes him all the more ugly, so does the likeness of superstition to religion.

Look how hateful affectation is in human affairs, so hateful is superstition in divine.

Better have no opinion of God at all than an injurious one.

It was not the Epicureans but the Stoics that troubled the ancient states.

There is no such thing as a mere atheist in opinion; but great hypocrites are the true atheists, who are ever handling holy things without reverencing them.

XIV. Pride.

For.

Pride is unsociable to vices among other things; and as poison by poison, so not a few vices are expelled by pride.

The good-natured man is subject to other men's vices as well as his own; the proud man to his own only.

Let pride go a step higher, and from contempt of others rise to contempt of self, and it becomes philosophy.

Against.

Pride is the ivy that winds about all virtues and all good things.

Other vices do but thwart virtues; only pride infects them.

Pride lacks the best condition of vice—concealment.

The proud man while he despises others neglects himself.

XV. Ingratitude.

For.

The crime of ingratitude is nothing more than a clear insight into the cause of a benefit conferred.

In our desire to show gratitude to certain persons we sacrifice both the justice we owe to others and the liberty we owe to ourselves.

Before we are called on to be grateful for a benefit, let us be sure as to the value of it.

Against.

The crime of ingratitude is not restrained by punishments, but given over to the Furies.

The bonds of benefits are stricter than the bonds of duties; wherefore he that is ungrateful is unjust and every way bad.

This is the condition of humanity no man is born in so public a fortune but he must obey the private calls both of gratitude and revenge.

XVI. Envy.

For.

It is natural for a man to hate that which reproaches to him his own fortunes.

Envy in commonwealths is a wholesome kind of ostracism.

Against.

Envy keeps no holidays.

Nothing but death can reconcile envy to virtue.

Envy puts virtues to laborious tasks, as Juno did Hercules.

XVII. Unchastity.

For.

It is owing to jealousy that chastity has been made a virtue.

Against.

Unchastity was the worst of Circe's transformations.

A man must be of a very sad disposition to think love a serious matter.

Why make a virtue of that which is either a matter of diet, or a show of cleanliness, or the child of pride?

Loves are like wildfowl; there is no property in them, but the right passes with the possession.

He that is unchaste is without all reverence for himself, which is the bridle of all vices.

All who like Paris prefer beauty, quit like Paris wisdom and power.

It was no vulgar truth that Alexander lighted on, when he said that sleep and lust were earnests of death.

XVIII. Cruelty.

For.

None of the virtues has so many crimes to answer for as clemency.

Cruelty, if it proceeds from revenge, is justice, if from danger, prudence.

He that has mercy on his enemy has no mercy on himself.

Bloodlettings are not oftener necessary in medicine than executions in states.

Against.

To delight in blood, one must be either a wild beast or a Fury.

To a good man cruelty always seems fabulous, and some tragical fiction.

XIX. Vain-Glory.

For.

He that would procure praise for himself must procure the benefit of other men.

He who is so sober that he cares for nothing that is not his own business, I fear he thinks the good of the public to be no business of his.

Dispositions that have in them some vanity are readier to undertake the care of the commonwealth.

Against.

Vain-glorious persons are ever factious, liars, inconstant, extreme.

Thraso is Gnatho's prey [48].

It is a shame for the suitor to woo the waiting-woman, and praise is the waiting-woman to virtue.

XX. Justice.

For.

Kingdoms and governments are but accessories to justice; for there would be no need of them if justice could be carried on without.

It is owing to justice that man is a god to man, and not a wolf.

Justice though it cannot extirpate vices, yet prevents them from doing hurt.

Against.

If to be just be not to do that to another which you would not have another do to you, then is mercy justice.

If everyone has a right to his own, surely humanity has a right to pardon.

What tell you me of equal measure, when to the wise man all things are equal?

Consider the condition of accused persons among the Romans, and conclude that justice is not for the good of the common wealth.

The ordinary justice of governments is but as a philosopher in the court—it merely conduces to the reverence of those who govern.

XXI. Fortitude.

For.

Nothing is to be feared except fear itself.

Against.

A noble virtue, to be willing to die yourself in order to kill another!

[48] The allusion is to the *Eunuchus* of Terence.

There is nothing either solid in pleasure, or secure in virtue, where fear intrudes.

He that looks steadily at dangers that he may meet them, sees also how he may avoid them.

Other virtues free us from the domination of Vice, Fortitude only from the domination of fortune.

A noble virtue, which a man may acquire by getting drunk!

He that is prodigal of his own life is dangerous to other men's.

Fortitude is the virtue of the iron age.

XXII. Temperance.

For.

The power of abstinence is not much other than the power of endurance.

Uniformity, concord, and measured motion, are attributes of heaven and characters of eternity.

Temperance is like wholesome cold; it collects and braces the powers of the mind.

Exquisite and restless senses need narcotics; so do passions.

Against.

I like not these negative virtues; for they show innocence and not merit.

The mind grows languid that has no excesses.

I like those virtues which induce excellence of action, not dullness of passion.

If you will have the motions of the mind all consonant, you must have them few—for it is a poor man that can count his stock.

To abstain from the use of a thing that you may not feel the want of it, to shun the want that you may not fear the loss of it, are precautions of pusillanimity and cowardice.

XXIII. Constancy.

For.

Constancy is the foundation on which virtues rest.

Wretched is the man who knows not what himself may become.

Human judgment is too weak to be true to the nature of things, let it then at least be true to itself.

Even vices derive a grace from constancy.

If inconstancy of mind be added to the inconstancy of fortune, in what darkness do we live?

Fortune is like Proteus; if you persevere she returns to her shape.

Against.

Constancy is like a surly porter; it drives much useful intelligence from the door.

It is fit that constancy should bear adversity well, for it commonly brings it on.

The shortest folly is the best.

XXIV. Magnanimity.

For.

If the mind do but choose generous ends to aim at, it shall have not only the virtues but the deities to help.

Virtues induced by habit or by precepts are ordinary; those imposed by a virtuous end are heroical.

Against.

Magnanimity is a poetical virtue.

XXV. Knowledge, Contemplation.

For.

That pleasure is indeed according to nature, of which there is no satiety.

What prospect so sweet as to look down upon the errors of other men?

How good a thing to have the motion of the mind concentric with the universe.

All depraved affections are but false estimations; and goodness and truth are the same thing.

Against.

Contemplation is a specious idleness.

Good thoughts are little better than good dreams.

Providence takes care of the world; do thou take care of thy country.

A politic man uses his very thoughts for seed.

XXVI. Learning.

For.

If books were written about small matters, there would be scarce any use of experience.

In reading a man converses with the wise, in action generally with fools.

Sciences which are of no use in themselves are not to be deemed useless, if they sharpen the wit and put the thoughts in order.

Against.

In colleges men learn to believe.

What art ever taught the seasonable use of art?

To be wise by rule and to be wise by experience are contrary proceedings; he that accustoms himself to the one unfits himself for the other.

Art is often put to a foolish use, that it may not be of no use at all.

Almost all scholars have this—when anything is presented to them, they will find in it that which they know, not learn from it that which they know not.

XXVII. Promptitude.

For.

Wisdom that comes not quick comes not in season.

He that quickly errs quickly amends his error.

He that is wise in deliberation and not upon the moment does no great matters.

Against.

The wisdom that is ready at hand does not lie deep.

Wisdom is like a garment, it must be light if it be for speed.

He whose counsels are not ripened by deliberation, his wisdom will not ripen with age.

Things speedily devised speedily fall out of favour.

XXVIII. Silence in matters of Secrecy.

For.

The silent man hears everything, for everything can be safely communicated.

He that is apt to tell what he knows, is apt to tell also what he knows not.

Mysteries are due to secrecy.

Against.

The best way of keeping the mind secret is to vary the manners.

Silence is the virtue of a confessor.

The silent man has nothing told him, because he gives nothing but silence in exchange.

To be close is next to being unknown.

XXIX. Facility.

For.

I love the man who yields to others' feelings, and yet keeps his judgment

Against.

Facility is a foolish privation of judgment.

free.

To be pliant is to be most like gold.

Favours received from a man of facile disposition pass for debts; denials for injuries.

He that obtains a favour from a man of facile disposition thanks himself for it.

The facile man is oppressed with all difficulties, for he involves himself in all.

The facile man seldom gets out of it without a blush.

XXX. Popularity.

For.

Wise men are commonly pleased with the same things; but to meet the various inclinations of fools is the part of wisdom.

To court the people is to be courted by the people.

Men that are themselves great find no single person to respect, but only the people.

Against.

He who agrees very well with fools may himself be suspected.

He that pleases the mob is apt to raise a mob.

Nothing that is moderate is liked by the common people.

The lowest of all flatteries is the flattery of the common people.

XXXI. Loquacity.

For.

He that is silent betrays want of confidence either in others or in himself.

All kinds of constraint are unhappy, that of silence is the most miserable of all.

Silence is the virtue of a fool, And therefore it was well said to a man that would not speak, "If you are wise you are a fool; if you are a fool, you are wise" [49].

Silence, like night, is convenient for treacheries.

Thoughts are wholesomest when they are like running waters.

Silence is a kind of solitude.

He that is silent lays himself out for opinion.

Silence neither casts off bad thoughts nor distributes good.

Against.

Silence gives to words both grace and authority.

Silence is the sleep which nourishes wisdom.

Silence is the fermentation of thought.

Silence is the style of wisdom.

Silence aspires after truth.

XXXII. Dissimulation.

For.

Dissimulation is a compendious wisdom.

We are not bound to say the same thing, but to aim at the same end [50].

Against.

If we cannot think according to the truth of things, let us at least speak according as we think.

When arts of policy are beyond a

[49] This sarcasm is ascribed by Diogenes Laertius and Plutarch to Theophrastus, the author of the *Characters* (which form the foundation of those of La Bruyère) and of many other works. It has also been ascribed to Simonides. Bacon seems to have taken it from Plutarch.

[50] *Non idem dicere, sed idem spectare, debemus* : a sentence in which I suspect that there is either some misprint or some inaccuracy of expression.—*J. S.*

Nakedness is uncomely in the mind as well is in the body.

Dissimulation is both a grace and a guard.

Dissimulation is the fence of counsels.

There are some for whom it is good to be deceived.

He that does everything without dissimulation is not the less a deceiver; for most people either do not understand him or do not believe him.

Want of dissimulation is nothing but want of power over the mind.

man's capacity, dissimulation must serve him for wisdom.

He that dissembles deprives himself of a principal instrument of action, namely trust and belief.

Dissimulation invites dissimulation.

He that dissembles is not free.

XXXIII. Boldness.

For.

He that shows diffidence invites reproof.

What action is to an orator boldness is to a politician,—the first requisite, the second, and the third.

I love a confessing modesty, hate an accusing one [51].

Confidence of manners brings minds the sooner together.

I like a reserved countenance and an open speech.

Against.

Boldness is the pioneer of folly.

Impudence is of no use except for imposture.

Confidence is the mistress of fools, and the sport of wise men.

Boldness is dullness of the sense joined with malice of the will.

XXXIV. Ceremonies, Puntos, Affectation.

For.

A decorous government of the countenance and carriage is the true seasoning of virtue.

We comply with the vulgar in our words, why not in habit and gesture?

He that does not preserve decorum in trifles and daily habits may be a great man; but be sure of this, such a man is not wise at all hours.

Virtue and wisdom without forms are like foreign languages; for they are not intelligible to the common people.

He that knows not the sense of the common people by an inward congruity, if he know it not by outward observation either, is of all men the most foolish.

Forms of behaviour are the translation of virtue into vernacular.

Against.

What more uncomely than to make life a piece of acting?

From ingenuousness comes grace, from artifice hatred.

Better painted cheeks and curled hair than painted and curled manners.

He that applies his mind to such small observations, is not capable of great thoughts.

Affectation is the shining putrefaction of ingenuousness [52].

XXXV. Jests.

For.

A jest is the orator's altar.

He that throws into everything a

Against.

Who does not despise these hunters after deformities and prettinesses?

[51] *Amo confitentem verecundiam, accusantem odi.* I do not understand this sentence. —*J. S.*

[52] The same image occurs in Ralegh's *Lye*:—

"Go tell the Court it glows
And shines like rotten wood."

dash of modest pleasantry keeps his mind the more at liberty.

To pass easily from jest to earnest and from earnest to jest is a thing more politic than men suppose.

A jest is many times the vehicle of a truth which would not otherwise have been brought in.

It is a dishonest trick to wash away with a jest the real importance of things.

Consider jests when the laugh is over.

These wits hardly penetrate below the surface of things, where jests ever lie.

Where a jest has any weight in serious matters, it is a childish levity.

XXXVI. Love.

For.

See you not that all men seek themselves? But it is only the lover that finds himself.

There is nothing which better regulates the mind than the authority of some powerful passion.

If you are wise, seek something to desire; for to him who has not some special object of pursuit all things are distasteful and wearisome [53].

Why should not one be content with one?

Against.

The stage is much beholden to love, life not at all.

Nothing has so many names as love; for it is a thing either so foolish that it does not know itself, or so foul that it hides itself with paint.

I hate those men of one thought.

Love is a very narrow contemplation.

XXXVII. Friendship.

For.

Friendship does the same things as fortitude, but more sweetly.

Friendship is a sweet seasoning to all other blessings.

It is the worst solitude, to have no true friendships.

It is a retribution worthy of bad faith to be deprived of friendships.

Against.

He that contracts close friendships imposes upon himself new necessities.

It is the part of a weak mind to go shares in fortune.

XXXVIII. Flattery.

For.

Flattery proceeds more from manners than malice.

To suggest what a man should be, under colour of praising what he is, was ever a form due in civility to the great.

Against.

Flattery is the style of slaves.

Flattery is the refuse of vices.

The flatterer is like the fowler that deceives birds by imitating their cry.

The unseemliness of flattery is matter of comedy, its mischief of tragedy.

Nothing so hard to cure as the ear.

XXXIX. Revenge.

For.

Revenge is a kind of wild justice.

He who requites violence with violence, sins against the law but not against the man.

The fear of private revenge is a useful thing; for laws too often sleep.

Against.

He that did the first wrong made a beginning of mischief, he that returned it made no end.

The more natural revenge is, the more need to restrain it.

He that is ready to return an injury was behindhand more in time perhaps than in will.

[53] Ovid. *Amores*, i. 9, 46. The line occurs in Bacon's *Promus*.—*J. S.*

XL. Innovation.

For.

Every medicine is an innovation.

He that will not have new remedies will have new evils.

Time is the greatest innovator, why then should we not imitate time?

Ancient precedents are unfit, modern ones corrupt and interested.

Leave it to the unskilful and the contentious to act by precedent.

As those who first bring honour into their family are commonly worthier than their descendants, so are the first precedents commonly better than the imitations of them.

A froward retention of custom is as turbulent a thing as an innovation.

Seeing that things alter of themselves to the worse, if counsel shall not alter them to the better, what shall be the end?

The slaves of custom are the sport of time.

Against.

Things new born are ill-shapen.

The only author I like is time.

There is no novelty that does not some hurt, for it unsettles what is.

Things settled by custom, though they be not good, yet at least they fit one with another.

What innovator imitates time, who so insinuates his innovations that they are not perceived?

That which comes unlooked for gets the less thanks from him whom it helps, and gives the more annoyance to him whom it hurts.

XLI. Delay.

For.

Fortune sells many things to him that is in a hurry, which she gives to him that waits.

While we hasten to take hold of the beginnings of things, we grasp shadows.

While things are wavering, watch; when they have taken their direction, act.

Commit the beginnings of actions to Argus, the end to Briareus.

Against.

Opportunity offers the handle of the bottle first, and afterwards the belly.

Opportunity is like the Sibyl; she raises the price as she diminishes the offer.

Speed is Pluto's helmet.

Things that are done betimes are done with judgment; things that are put off too late, by circuit [54].

XLII. Preparation.

For.

He that attempts a great matter with small means, does but provide himself with an occasion of hoping.

With small preparations you may purchase wisdom, but not fortune.

Against.

The time to cease preparing is the instant you can begin acting.

Let no man hope that he can bind fortune by preparation.

To interchange preparation and action is politic, to part them is vain and unfortunate.

Great preparation wastes both time and matter.

XLIII. Meeting the First Move.

For.

More dangers have deceived men than forced them.

It is less trouble to apply the remedy

Against.

He that arms himself to meet danger teaches it to come on, and in remedying fixes it.

[54] *Per ambitum:* meaning, I suppose (if the reading be correct), that at first you can choose the best way, but at last you must take the way that offers.—*J. S.*

to a danger than to keep watch upon the approach of it.

A danger is no more light, if it once seem light.

The very remedies of dangers carry little dangers in them.

It is better to have to deal with a few dangers in their maturity, than with the menaces of every one.

XLIV. Violent Counsels.

For.

For those who embrace this mild kind of wisdom an increase of the evil is salutary.

Necessity, which gives violent counsels, also executes them.

Against.

Every violent remedy is pregnant with some new evil.

The only violent counsellors are anger and fear.

XLV. Suspicion.

For.

Distrust is the sinews of wisdom, but suspicion is a medicine for the joints.

His faith is justly suspected whose faith suspicion shakes.

Suspicion loosens a frail faith, but braces a strong one.

Against.

Suspicion discharges faith.

The distemper of suspicions is a kind of civil madness.

XLVI. The Words of the Law.

For.

The interpretation which departs from the letter is not interpretation but divination.

When the letter is departed from, the judge becomes the law-giver.

Against.

The sense according to which each word is to be interpreted must be gathered from all the words together.

The worst tyranny is the torturing of the law.

XLVII. For Witnesses against Arguments.

For.

He who relies on arguments decides according to the merits of the pleader, not of the cause.

He who believes arguments more than witnesses, ought to give more credit to the wit than the senses.

Arguments might be trusted, if men never acted absurdly.

Arguments, when opposed to testimony, may make a fact seem strange, but cannot make it seem not a fact.

Against.

If witnesses are to be believed in spite of arguments, it is enough if the judge be not deaf.

Arguments are the antidote against the poison of testimony.

It is safest to believe those proofs which seldomest lie.

These Antitheses (which I have here set down) are perhaps of no great value; but as I had long ago prepared and collected them, I was loth to let the fruit of my youthful industry perish—the rather because (if they be carefully examined) they are *seeds* only, not *flowers*. In one respect indeed they savour altogether of youth, there being plenty of them in the moral and demonstrative kind, but in the deliberative and judicial very few.

The third Collection, which belongs to the Promptuary, or Preparatory Store, and is likewise deficient, is that of what I call *Lesser Forms* [55]. I mean those parts of speech which answer to the vestibules, back doors, ante-chambers,

[55] The *Promus* contains some of these formulæ.

withdrawing-chambers, passages etc., of a house ; and may serve indiscriminately for all subjects. Such are prefaces, conclusions, digressions, transitions, intimations of what is coming, excusations, and a number of the kind. For as in buildings it is a great matter both for pleasure and use that the fronts, doors, windows, approaches, passages, and the like be conveniently arranged, so also in a speech these accessory and interstitial passages (if they be handsomely and skilfully fashioned and placed) add a great deal both of ornament and effect to the entire structure. Of these Forms I will subjoin one or two examples, without dwelling longer upon them. For though they be matters of no small use, yet as I have nothing of my own to add in this part, but merely transcribe the naked forms out of Demosthenes or Cicero or some other chosen author, they are not of that importance that I should spend time upon them.

Examples of *Lesser Forms*.

A Conclusion in a deliberative.

So may we redeem the fault passed and at the same time prevent the inconveniences to come.

Corollary of an accurate Distribution.

That all may know that I have no wish either to evade anything by silence or to obscure it by speech[56].

A Transition with a Hint.

Let us pass these things, and yet not without marking and turning back to look at them as we go by[57].

A Form to preoccupy the Mind against an Opinion previously formed.

I will make you understand in all this business how much is truth, how much error, and how much envy[58]. These few may be enough by way of example; and with these I conclude the Appendices to Rhetoric, which belong to the Promptuary.

CHAPTER IV.

Two General Appendices of the Art of Transmission ; Critical and Pedagogical.

There remain two appendices touching the transmission of knowledge in general : the one Critical, the other Pedagogical. For as the principal part of transmission of knowledge consists in the writing of books, so the relative part thereof turns on the reading of books. Now reading is either directed by teachers, or attained by each man's own endeavours ; and to this these two knowledges which I have mentioned appertain.

To the Critical part belongs, first, the true correction and amended edition of approved authors ; whereby both themselves receive justice and their students light. Yet in this the rash diligence of some has done no little harm. For many critics, when they meet a passage which they do not understand, immediately suppose that there is a fault in the copy. As in that passage of Tacitus, where he relates that when a certain colony asserted before the senate the right of asylum, their arguments were not very favourably listened to by the emperor and the senate ; whereupon the ambassadors, fearing for the success of their cause, gave a good sum of money to Titus Vinius to support them—by which means they prevailed. "Then" (says Tacitus) "the dignity and antiquity of the colony had its weight"[1]; meaning that the arguments which appeared light before gained

[56] Cic. *Pro. Cluent.* c. i. The quotation is inaccurate.
[57] Cic. *Pro. Sext.* c. 5.
[58] Cic. *Pro. Cluent.* c. 4.
[1] Cf. Tacitus, *Hist.* i. 66. The case is incorrectly stated. That Bacon had but an imperfect recollection of the passage, is plain from his substituting the name of Titus Vinius for that of Fabius Valens, and from his mentioning the senate, as if the trans-

fresh weight by the money. But a critic, and he not one of the worst, here erased the word *tum*, and substituted *tantum*. And this bad habit of critics has brought it to pass that (as some one has wisely remarked) "the most corrected copies are often the least correct". Moreover, to speak truly, unless critics be learned in the sciences which the books they edit treat of, their diligence is not without its danger.

Secondly, there belongs to the Critical part the interpretation and explication of authors,—commentaries, scholia, annotations, collections of beauties, and the like. In labours of this kind however some of the critics have been visited with that very bad disease, of leaping over many of the obscurer places, while they linger and expatiate to tediousness on those which are clear enough; as if the object were not so much to illustrate the author as to display on every possible opportunity the extensive learning and various reading of the critic himself. It were especially to be desired (though this is a matter which belongs rather to the art of transmission in the main, than to the appendices thereof) that every writer who handles arguments of the obscurer and more important kind, should himself subjoin his own explanations; that so the text may not be interrupted by digressions and expositions, and the notes may not be at variance with the writer's meaning. Something of the kind I suspect in Theon's Commentary on Euclid [2].

There belongs thirdly to the Critical part (and from this indeed it derives its name) the insertion of some brief judgment concerning the authors edited, and comparison of them with such other writers on the same subjects; that students may by such censure be both advised what books to read and better prepared when they come to read them. This last office is indeed, so to speak, the critic's chair; which has certainly in our age been ennobled by some great men,—men in my judgment above the stature of critics.

As for the Pedagogical part, the shortest rule would be, "Consult the schools of the Jesuits"; for nothing better has been put in practice. Nevertheless I will as usual give a few hints, gleaning an ear here and there. I am clearly in favour of a collegiate education for boys and young men; not in private houses, nor merely under schoolmasters. For in colleges there is a greater emulation of the youths amongst themselves; there is also the sight and countenance of grave men, which tends to modesty, and forms their young minds from the very first after that model; and in short there are very many advantages in a collegiate education. For the order and manner of teaching, I would say first of all,—avoid abridgments and a certain precocity of learning, which makes the mind over bold, and causes great proficiency rather in show than in fact. Also let some encouragement be given to the free exercise of the pupils' minds and tastes; I mean, if any of them, besides performing the prescribed exercises, shall steal time withal for other pursuits to which he is more inclined, let him not be checked. Observe moreover (what perhaps has not hitherto been remarked) that there are two ways of training and exercising and preparing the mind, which proceed in opposite directions. The one begins with the easier tasks, and so leads on gradually to the more difficult; the other begins by enforcing and pressing the more difficult, that when they are mastered the easier ones may be performed with pleasure. For it is one method to begin swimming with bladders, which keep you up; and another to begin dancing with heavy shoes, which weigh you down. Nor is it easy to tell how much a judicious intermixture of these methods helps to advance the faculties of the mind and body. Again, the application

action had taken place at Rome. It was by a donative to the soldiery that the colony of Vienna was saved, not (directly at least) by a bribe to their leader; though Tacitus adds that it was believed that he also had been bought over,—"ipsum Valentem magnâ pecuniâ emptum".—*Hist.* i. 66.

[2] It seems probable that this remark, showing a kind of reading with which Bacon does not seem to have been familiar (vide suprà p. 476), was derived from his friend Sir Henry Savile. We find Theon's services in relation to Euclid's *Elements* depreciatingly spoken of in Saville's *Prælectiones tresdecim in Principium Elementorum Euclidis* (1621), pp. 12, 13.

and choice of studies according to the nature of the mind to be taught, is a matter of wonderful use and judgment; the due and careful observation whereof is due from the masters to the parents, that they may be able to advise them as to the course of life they should choose for their sons. And herein it should be carefully observed, that as a man will advance far fastest in those pursuits to which he is naturally inclined, so with respect to those for which he is by defect of nature most unsuited there are found in studies properly chosen a cure and remedy for his defects. For example, if one be bird-witted, that is, easily distracted and unable to keep his attention as long as he should, Mathematics provides a remedy; for in them if the mind be caught away but a moment, the demonstration has to be commenced anew. Exercises, again, it is obvious, play the principal part in instruction. But few have observed that there ought to be not only a wise choice and course of exercises, but a wise intermission of them also; for it is well observed by Cicero, "that men in their exercises for the most part exercise their faults as well as their faculties"[3], so that an ill habit is sometimes acquired along with the good. It is safer therefore to intermit exercises from time to time and return to them after a while, than continually to pursue and press them. But enough of this. Certainly these are matters not very grand or imposing at first sight, yet of singular fruit and efficacy. For as the good or ill thriving of plants depends chiefly upon the good or ill treatment they received when they were young and tender; and as the immense increase of the Roman empire is by some deservedly attributed to the virtue and wisdom of the first six kings, who were in truth as the tutors and guardians of it in its infancy[4]; so surely the culture and ordering of youthful or tender years has a power which though latent and not perceptible to everybody, neither length of time nor assiduity and earnestness of labour in mature age can afterwards countervail. It will not be amiss to observe also, that even mean faculties, when they fall into great men or great matters, sometimes work great and important effects. Of this I will adduce a memorable example; the rather, because the Jesuits appear not to despise this kind of discipline; therein judging (as I think) well. It is a thing indeed, if practised professionally, of low repute; but if it be made a part of discipline, it is of excellent use. I mean stage-playing: an art which strengthens the memory, regulates the tone and effect of the voice and pronunciation, teaches a decent carriage of the countenance and gesture, gives not a little assurance, and accustoms young men to bear being looked at. The example which I shall give, taken from Tacitus, is that of one Vibulenus, formerly an actor, then a soldier in the Pannonian legions. This man had at the death of Augustus raised a mutiny, whereupon Blæsus, the lieutenant, committed some of the mutineers to prison. The soldiers however broke in and let them out; whereupon Vibulenus getting up to speak, began thus; "These poor innocent wretches you have restored to light and life; but who shall restore life to my brother, or my brother to me? whom, being sent hither in message from the legions of Germany, to treat of the common cause, this man has murdered last night by some of his swordsmen, whom he keeps and arms for the execution of soldiers. Answer, Blæsus, where have you thrown his body? Enemies themselves deny not burial. When with kisses and tears I shall have satiated my grief, command me also to be slain beside him; only let these my fellows, seeing we are put to death for no crime, but because we consulted for the good of the legions, have leave to bury us"[5]. With which words he excited such excessive jealousy and alarm, that, had it not shortly afterwards appeared that nothing of the sort had happened, nay, that he had never had a brother, the soldiers would hardly have kept their hands off the prefect; but the fact was that he played the whole thing as if it had been a piece on the stage.

And now I am come to the end of my treatise concerning Rational Knowledges; wherein if I have sometimes made the divisions other than those that are received, yet let it not be thought that I disallow all those divisions which I do not use. For there is a double necessity imposed upon me of altering the divisions. First, because to reduce into one class things next in nature, and to gather into one

[3] Cic. *De Orator.* i. 33. [4] Macchiavelli, *Discorsi*, i. 19. [5] Tacit. *Ann.* i. 16–22.

bundle things wanted for use, are operations differing in the very end and intention. For as a secretary of a king or state, when he arranges his papers in his study or general cabinet, puts those things together, no doubt, which are of like nature,—treatises by themselves in one place, instructions by themselves in another, foreign letters, domestic letters, and the like, each apart by themselves, —but when on the contrary he arranges them in his boxes or particular cabinet, he puts those together which, though of different kinds, he thinks he will have occasion to use together ; so in this general cabinet of knowledge it was necessary for me to make the divisions according to the nature of the things themselves, whereas if I had been to handle any particular knowledge I should have adopted the divisions fittest for use and practice. Secondly, because the introduction of the *Desiderata*, and the incorporation of them with the rest, involved as a consequence an alteration in the distribution of the existing sciences. For suppose (by way of demonstration) that the arts which we now have are as 15, and that the same with the desiderata added are as 20 ; I say that the factors of the number 15 are not the same with the factors of the number 20. For the factors of 15 are 3 and 5 ; the factors of 20 are 2, 4, 5, and 10. It is plain therefore that these things could not be otherwise. And so much for the Logical Sciences.

Book VII.

CHAPTER I.

The Division of Moral Knowledge into the Exemplar or Platform of Good, and the Georgics or Culture of the Mind. The Division of the Platform of Good, into Simple and Comparative Good. The Division of Simple Good into Individual Good, and Good of Communion.

We come now, most excellent king, to moral knowledge, which respects and considers the will of man. The will is governed by right reason, seduced by apparent good, having for its spurs the passions, for its ministers the organs and voluntary motions; wherefore Solomon says, "Above all things keep thy heart with all diligence, for out of it are the issues of life"[1]. In the handling of this science, the writers seem to me to have done as if a man who, professing to teach the art of writing, had exhibited only fair copies of letters, single and joined, without giving any direction for the carriage of the pen and framing of the characters. So have these writers set forth good and fair copies, and accurate draughts and portraitures of good, virtue, duty, and felicity, as the true objects for the will and desires of man to aim at. But though the marks themselves be excellent and well placed, how a man may best take his aim at them; that is, by what method and course of education the mind may be trained and put in order for the attainment of them, they pass over altogether, or slightly and unprofitably. We may discourse as much as we please that the moral virtues are in the mind of man by habit, and not by nature, and we may make a formal distinction that generous spirits are won by doctrines and persuasions, and the vulgar sort by reward and punishment; or we may give it in precept that the mind like a crooked stick must be straightened by bending it the contrary way[2] and the like scattered glances and touches; but they would be very far from supplying the place of that which we require.

The reason of this neglect I suppose to be that hidden rock whereupon both this and so many other barks of knowledge have struck and foundered; which is, that men have despised to be conversant in ordinary and common matters which are neither subtle enough for disputation, nor illustrious enough for ornament. It is hard to compute the extent of the evil thus introduced; namely, how from innate pride and vainglory men have chosen those subjects of discourse, and those methods of handling them, which rather display their own genius than benefit the reader. Seneca says well, "Eloquence is injurious to those whom it inspires with a fondness for itself, and not for the subject[3]"; for writings should be such as should make men in love with the lesson, and not with the teacher. They therefore are on the right path, who can say the same of their counsels as Demosthenes did of his, and conclude with this sentence, "If you do what I advise you will not only praise the orator at the time, but in no long time yourselves also, by reason of the better condition of your affairs"[4]. For myself, most excellent king, I may truly say that both in this present work, and in those I intend to publish hereafter, I often advisedly and deliberately throw aside the dignity of my name and wit (if such thing be) in my endeavour to advance human interests; and being one that should properly perhaps be an architect in philosophy and the sciences, I turn common labourer, hodman, anything that is wanted; taking upon myself the burden and execution of many

[1] Prov. iv. 23.

[2] Arist. *Nic. Eth.* ii. 9.

[3] Seneca, *Epist.* 52. Seneca is speaking of the auditors of popular lecturers on philosophy. The only kind of applause which he would allow the lecturer to affect or the audience to bestow, is that of young men so stirred by the matter that they cannot refrain.—*J. S.*

[4] Demosth. *Olynth.* ii.

things which must needs be done, and which others through an inborn pride shrink from and decline. But to return to the subject: moral philosophers have chosen for themselves a certain glittering and lustrous mass of matter, wherein they may principally glorify themselves for the point of their wit, or the power of their eloquence; but those which are of most use for practice, seeing that they cannot be so clothed with rhetorical ornaments, they have for the most part passed over.

Neither needed men of so excellent parts to have despaired of a fortune which the poet Virgil promised to himself, and indeed obtained; who got as much glory of eloquence, wit, and learning in the expressing of the observations of husbandry, as of the heroical acts of Æneas:

> Nec sum animi dubius, verbis ea vincere magnum
> Quam sit, et angustis his addere rebus honorem[5].

And surely, if the purpose be in good earnest, not to write at leisure that which men may read at leisure, but really to instruct and suborn action and active life, these Georgics of the Mind are no less worthy to be had in honour than the heroical descriptions of virtue, goodness, and felicity, whereon so much labour has been spent.

Wherefore I will divide moral knowledge into two principal parts; the one "the *Exemplar* or *Platform of Good*," the other "the *Regiment* or *Culture of the Mind*," which I also call the *Georgics of the Mind*; the one describing the nature of good, the other prescribing rules how to accommodate the will of man thereunto.

The doctrine touching the platform or nature of good, considers good either Simple or Comparative; either the kinds of good, or the degrees of good; in the latter whereof those infinite disputations and speculations touching the supreme degree thereof, which they termed "Felicity," "Beatitude," or the "Highest Good" (which were as the heathen Divinity), are by the Christian faith removed and discharged. And as Aristotle says, "That young men may be happy, but only by hope"[6], so we, instructed by the Christian faith, must all acknowledge our minority, and content ourselves with that felicity which rests in hope.

Freed therefore happily, and delivered from this doctrine of the heathen heaven, whereby they certainly imagined a higher elevation of man's nature than it is really capable of (for we see in what height of style Seneca writes, "It is true greatness to have the frailty of a man and the security of a god"[7]), we may with more sobriety and truth receive the rest of what they have delivered concerning the doctrine of the Exemplar; wherein, for the nature of good Positive or Simple, they have painted it excellently and to the life, as in a picture, diligently representing the forms of virtues and duties, their situations and their postures, kinds, relations, parts, subjects, provinces, actions, administrations, and the like; nay further, they have commended and insinuated them into man's nature and spirit with great quickness of argument and beauty of persuasions; yea, and fortified and entrenched them, as much as discourse can do, against corrupt and popular opinions. Again, for the nature of Comparative Good, they have also excellently well handled it, in their triplicity of good[8]; in the comparison between a contemplative and active life; in the distinction between virtue with reluctation, and virtue settled and secured; in their encounters between honesty and profit; in their balancing of virtue with virtue, as to which outweighs the other, and the like; so that I find that this part is excellently laboured, and that the ancients have done their work admirably therein, yet so as the pious and earnest diligence of divines, which has been

[5] Virg. *Georg.* iii. 289:—

> How hard the task, alas, full well I know,
> With charms of words to grace a theme so low.

[6] Arist. *Nic. Eth.* i. 10. [7] Seneca, *Epist.* 53.

[8] Namely the good which relates respectively to mind, body and estate. See Aristot. *Nicom. Eth.* i. 8. 2.

employed in weighing and determining duties, moral virtues, cases of conscience, the bounds of sin, and the like, has left the philosophers far behind.

Notwithstanding (to return to the philosophers), if before they had come to the popular and received notions of virtue and vice, pleasure and pain, and the rest, they had stayed a little longer upon the inquiry concerning the roots of good and evil, and the strings of those roots; they had given in my opinion a great light to those questions which followed; and especially if they had consulted with the nature of things, as well as moral axioms, they had made their doctrines less prolix, and more profound; which being by them in part omitted, and in part handled with much confusion, I will briefly resume; and endeavour to open and cleanse the fountains of morality, before I come to the knowledge of the culture of the mind, which I set down as deficient. For this will in my opinion reinforce the doctrine of the exemplar with new strength.

There is formed and imprinted in everything an appetite toward two natures of good; the one as everything is a total or substantive in itself, the other as it is a part or member of a greater body; whereof the latter is in degree the greater and the worthier, because it tends to the conservation of a more general form. The former of these may be termed "Individual or Self-good," the latter the "Good of Communion". Iron in particular sympathy moves to the loadstone, but yet if it exceed a certain quantity it forsakes its affection to the loadstone, and like a good patriot moves to the earth, which is the region and country of its connaturals; so again, compact and massy bodies move to the earth, the great collection of dense bodies; and yet rather than suffer a divulsion in nature and create a vacuum, they will move upwards from the centre of the earth, forsaking their duty to the earth in regard to their duty to the world. Thus it is ever the case, that the conservation of the more general form controls and keeps in order the lesser appetites and inclinations. This prerogative of the communion of good is much more engraven upon man, if he be not degenerate; according to that memorable speech of Pompey, when being in commission of purveyance for a famine at Rome, and being dissuaded with great vehemency and instance by his friends about him that he should not hazard himself to sea in an extremity of weather, he said only to them, "It is needful that I go, not that I live"[9], so that the love of life, which is the predominant feeling in the individual, did not with him outweigh affection and fidelity to the commonwealth. But why do I dwell on this point? for never in any age has there been any philosophy, sect, religion, law, or other discipline, which did so highly exalt the good which is communicative, and depress the good which is private and particular, as the Holy Christian Faith; well declaring that it was the same God who gave the Christian law to men, that gave also those laws of Nature to inanimate creatures; whence we read that some of the elected saints of God have wished, rather than that their brethren should not obtain salvation, that they themselves should be anathematized and erased out of the book of life, in an ecstasy of charity and infinite feeling of communion[10].

This being set down and strongly planted, judges and determines of some the most important controversies in moral philosophy. For first it decides the question touching the preferment of the contemplative or active life, and decides it against Aristotle. For all the reasons which he brings for the contemplative respect private good, and the pleasure or dignity of a man's self; in which

[9] Plut. in Pomp. c. 50.

[10] St. Paul, Romans. ix. 3; and Exod. xxxii. 32. Bacon here touches on what theologians call the conditional sacrifice of salvation—a matter frequently referred to in the unhappy controversy between Bossuet and Fénelon. The 33rd of the Articles of Issy, which they both signed, sanctions the notion of this conditional sacrifice. It appears, however, that the article in question was one of the four added at Fénelon's suggestion to Bossuet's original draft, and that the latter did not consent without reluctance to its introduction. Fénelon's own views on the subject are developed in his *Instruction Pastorale*, etc., sec. 10, and elsewhere. St. Chrysostom, according to a passage quoted by Fénelon, disapproved greatly of those who held that St. Paul speaks merely of temporal death.

respects no question the contemplative life has the pre-eminence, being not much unlike that comparison which Pythagoras made for the gracing and magnifying of philosophy and contemplation; who, being asked by Hiero what he was, answered, "that if Hiero were ever at the Olympian games, he knew the manner, that some came to try their fortune for the prizes; and some came as merchants to utter their commodities; and some came to make good cheer, and meet their friends; and some came to look on; and that he was one of them that came to look on" [11]. But men must know that in this theatre of man's life it is reserved only for God and Angels to be lookers on [12]; neither could the like question ever have been raised in the Church (notwithstanding it has been in the mouths of many, "Right dear in the sight of the Lord is the death of his Saints" [13], by which text they used to exalt that civil death of theirs, and the orders and rules of the life monastic); were it not true withal that the monastical life is not simply contemplative, but engaged also in the performance of certain ecclesiastical duties, such as continual prayer, and votive sacrifices offered to God, and the leisurely writing of theological books for advancing the knowledge of the divine law; as Moses did, when he abode so long in the Mount. And so we see, that Enoch, the seventh from Adam, who seems to have been the first contemplative (for he is said to have walked with God [14]), yet also endowed the Church with a book of prophecy, which St. Jude cites [15]. But for mere contemplation which should be finished in itself without casting beams of heat and light upon society, assuredly divinity knows it not. It decides also the question so earnestly argued between the schools of Zeno and Socrates on the one hand, who placed felicity in virtue simple or attended, which is ever chiefly concerned with the duties of life; and on the other hand, the numerous other sects, as the Cyrenaics and Epicureans, who placed it in pleasure, and made virtue (as it is used in some comedies, wherein the mistress and the maid change habits) to be but as a servant, without which pleasure cannot be properly served and attended; and the reformed school of the Epicureans, which pronounced felicity to be nothing else than the tranquillity and serenity of a mind free from perturbation (as if they would have deposed Jupiter again, and restored Saturn with the Golden Age, when there was neither summer nor winter, spring nor autumn, but all after one air and season); and lastly, that exploded school of Pyrrho and Herillus, who placed felicity in the removal from the mind of all doubts and scruples, admitting no fixed and consistent nature of good and evil, but esteeming actions good or evil according as they proceed from the mind acting clearly and regularly, or with reluctance and aversion; which opinion was revived in the heresy of the Anabaptists, who measured all things according to the notions or instincts of the spirit, and the constancy or wavering of belief. Now all the points above enumerated manifestly regard private repose and contentment, and not the good of society.

It censures also the philosophy of Epictetus, who presupposes that felicity must be placed in those things which are in our power, lest we be subject to fortune and disturbance [16]; as if it were not a thing much more happy to fail in

[11] Iamblichus in Vitâ, and Cic. *Tusc. Quæst.* v. 3. "Hiero" is a mistake for Leo (tyrant of Phliuns). The story of the interview between him and Pythagoras is told by Cicero, *Tusc. Quæst.* v. 3. Compare Iamblichus's Life of Pythagoras, in which, though the same sentiment is ascribed to him, it is not put in a dramatic form.

[12] Compare St. Augustine, speaking of St. Paul, *De Civ. Dei*, xiv. 9.

[13] Psalm cxvi. 15. [14] Gen. v. 24. [15] Jude, 14.

[16] The moral philosophy of the Stoics is misunderstood when it is said that they placed happiness in that which is in the wise man's power, in order that he may be happy. They set out from the inquiry, "What is the end and purpose, the summum bonum, of man's life?" in which is involved the assumption that it *has* an end and purpose, and that this is in its own nature attainable. And this assumption may be developed into an answer to the inquiry in which it is involved. For as the wise man, who is the representative of humanity in its best estate, must be capable of attaining the true end of his being, they concluded that whatever might in virtue of outward circumstances be to him unattainable, must be, with reference to that end, a thing indifferent; or, in other words, that

good and virtuous ends for the public, than to obtain all that we can wish to ourselves in our private fortune; as Gonsalvo, addressing his soldiers and pointing to Naples, nobly protested, "He had rather die one foot forwards, than secure a long life by one foot of retreat[17]". Whereunto agrees the wisdom of that heavenly leader, who has affirmed "that a good conscience is a continual feast[18]", showing plainly that the conscience of good intentions howsoever failing in success imparts a joy truer, surer, and more agreeable to nature, than all the provisions which a man can make either for the satisfying of his desires or for the repose of his mind.

It censures likewise that abuse of philosophy which grew general about the times of Epictetus, in converting it into an occupation or profession, as if the business of philosophy had been not to resist and extinguish perturbations, but to fly and avoid the causes and occasions of them, and to shape a particular kind and course of life to that end; introducing such a health of mind as was that health of body cultivated by Herodicus, of whom Aristotle tells us that he did nothing all his life long but attend his health, and accordingly abstained from an infinite variety of things, depriving himself as it were of the use of his body in the meantime[19]. Whereas, if men refer themselves to duties of society, as that state of body is most to be desired which is best able to endure and overcome all changes and extremities; so likewise that mind is to be esteemed truly and properly healthy which can go through the greatest temptations and perturbations: so that Diogenes's opinion seems excellent, who commended that strength of mind which enabled a man not to abstain but to sustain, and which could refrain its impetuosity even in the steepest precipices, and give it the property of a well broken horse, that of stopping and turning most quickly and suddenly[20].

Lastly, it censures also the tenderness and want of compliance in some of the most ancient and reverend philosophers, who retired too easily from civil business that they might avoid indignities and perturbations, and live (as they thought) more pure and saint-like; whereas the resolution of men truly moral ought to be such as the same Gonsalvo required in a soldier, "whose honour," he said, "should be of a stouter web, and not so fine as that everything should catch in it, and rend it".

CHAPTER II.

The Division of Individual or Self-good into Active and Passive Good.—The Division of Passive Good into Conservative and Perfective Good.—The Division of the Good of Communion, into General and Respective Duties.

To resume then, and pursue first private and self good, we will divide it into *Good Active and Good Passive;* for this difference of good, not unlike to that which, amongst the Romans, was expressed in the familiar or household terms of "Promus" and "Condus", is formed also in all things, and is best disclosed in the two several appetites in creatures; the one, to preserve or continue themselves: and the other, to multiply and propagate themselves; whereof the latter, which is active and as it were the promus, seems to be the stronger and more worthy; and the former, which is passive and as it were the condus, seems

the summum bonum must be looked for in that which is in his own power. That felicity in this sense is always in the wise man's power is thus not an arbitrary assertion, but results from the principle that life is not merely a purposeless dream.

[17] "Desiderare piuttosto di avere al presente la sua sepoltura un palmo di terreno più avanti, che col ritirarsi indietro poche braccie allungare la vita cento anni."—Guicciard. vi. 2.

Fernandez Gonsalvo of Cordova, commonly called the Great Captain, and certainly one of the most successful soldiers of the age in which he lived, was employed by the King of Spain in his Italian wars. He died at [Granada] in [December, 1515]. See, for the testimony to his merits of apparently an unwilling witness, Brantôme's *Vies des Grands Capitaines*, and for a panegyrical biography, Paulus Jovius.

[18] Prov. xv. 15.

[19] Rhet. i. 5. 10. See also Plato's *Republic*, b. iii.

[20] [The reference may be to Diogenes Laërt. in *Diogen.* § 4.]

to be inferior. For in the universe, the heavenly nature is mostly the agent, the earthly nature the patient; in the pleasures of living creatures, that of generation is greater than that of food; in divine doctrine, "It is more blessed to give than to receive"[1]; and in common life there is no man's spirit so soft and effeminate but esteems the effecting of somewhat that he has fixed in his desire more than any pleasure or sensuality. And this pre-eminence of the active good is infinitely raised by the consideration that the condition of man is mortal, and exposed to the blows of fortune; for if we might have a certainty and perpetuity in our pleasures, the certainty and continuance of them would advance their price. But when we see it is but thus with us, "We count it much to postpone death for awhile"[2]; "Boast not thyself of the morrow; Thou knowest not what a day may bring forth"[3]; it is no wonder that we earnestly pursue such things as are secured and exempted from the injuries of time, which are only our deeds and our works; as it is said, "Their works follow them"[4]. There is also another important pre-eminence of the active good, produced and upheld by that affection which is inseparable from human nature; the love of novelty and variety; which in the pleasures of the sense (which is the principal part of passive good) is very confined, and can have no great latitude[5]. "Only think how often you do the same thing over and over. Food, Sleep, Play, come round in a perpetual circle; a man might wish to die, not only from fortitude or misery or wisdom, but merely from disgust and weariness of life." But in enterprises, pursuits and purposes of life there is much variety; whereof men are sensible with pleasure in their inceptions, progressions, rests, recoils, reintegrations, approaches, and attainings to their ends; so as it was well said, "Life without a purpose is unsettled and languid"[6]. And this befalls as well the wise as the foolish; as Solomon says, "A heady man seeks to satisfy his desire, and intermeddles with everything"[7]. And we see that the greatest kings who might have at command everything which can gratify the sense, have yet sometimes affected mean and frivolous pursuits (as was the passion of Nero for the harp, of Commodus for gladiatorial combats, of Antoninus for chariot-driving, and the like); which nevertheless they esteemed more of than of the whole abundance of sensual pleasures; so much pleasanter is it to be doing than to be enjoying.

But here it must be more carefully observed, that this active individual good has no identity with the good of society, though in some case it has an incidence into it: for although it many times produces and brings forth acts of beneficence (which is a virtue of communion), yet there is this difference, that these acts are mostly done not with a view to the benefit and happiness of others, but to a man's own power and greatness; as plainly appears when this kind of active good strikes on a subject contrary to the good of society. For that gigantean state of mind, which possesses the troublers of the world (such as was Lucius Sylla, and infinite others in smaller model, who are bent on having all men happy or unhappy as they are their friends or enemies[8], and would shape the world according to their own humours, which is the true Theomachy), this I say aspires to the active good of the individual (apparent good at least), though it recedes farthest of all from the good of society.

But Passive good is subdivided into *Conservative and Perfective*. For there is impressed on all things a triple desire or appetite, in respect of self or individual good; one of preserving, another of perfecting, and a third of multiplying and spreading themselves: whereof the last is that which we have just handled by the name of "Active good", so that there remain only the two other goods which we have mentioned; whereof that of perfecting is the highest; for to preserve a thing in its existing state is the less, to raise the same to a higher nature is the greater. For in all things there are some nobler natures to the dignity and

[1] Luke, xiv. 12-14; Acts, xx. 35.
[2] Seneca, *Nat. Quæst.* ii. 59.
[3] Prov. xxvii. 1.
[4] Rev. xiv. 13
[5] Seneca, *Ep.* 77.
[6] Seneca, *Ep.* 95.
[7] Cf. Prov. xviii. 1.
[8] The epitaph which Plutarch says Sylla made for himself was probably in Bacon's mind. It boasted that no man had surpassed him in doing good to his friends or evil to his enemies. See Plut. in *Sylla*.

excellence whereof inferior natures aspire as to their sources and origins. So it was not unfitly said of men "that they have a fiery vigour and a heavenly origin"[9], for the assumption or approach of man to the Divine or Angelical nature is the perfection of his form; the false and preposterous imitation of which perfective good is the very plague and stormy whirlwind of human life, which carries off and destroys everything; while men upon the instinct of an advancement formal and essential are carried by a blind ambition to seek an advancement merely local. For as those who are sick, and find no remedy, tumble up and down and change place, as if by a remove local they could obtain a remove internal, and get away from themselves and from the disease that is within them; so is it in ambition, when men possessed by a false idea of exalting their nature obtain nothing else but an eminence and exaltation of place.

The good of conservation consists in the reception and fruition of that which is agreeable to our natures; which, though it seems to be the most pure and natural of pleasures, is yet the softest and the lowest. And this also receives a difference, which has in part been weakly judged, in part not examined; for the good of fruition, or (as it is commonly termed) pleasure, is placed either in the sincerity of the fruition, or in the vigour of it; the one of which is the result of equality; the other of variety and vicissitude; the one having less mixture of evil, the other a stronger and more lively impression of good. Which of these is the greater good, is a question controverted, but whether man's nature may not be capable of both is a question not inquired. The former question being debated in a dispute between Socrates and a sophist, Socrates placing felicity in an equal and constant peace of mind, and the sophist in much desiring and much enjoying, they fell from arguments to ill words; the sophist saying that "Socrates's felicity was the felicity of a block or stone[10]", and Socrates saying, "that the sophist's felicity was the felicity of one that had the itch, who did nothing but itch and scratch". And both these opinions do not want their supports; for the opinion of Socrates is much upheld by the general consent even of the Epicureans, who did not deny that virtue bears a great part in felicity; and if so, certain it is, that virtue has more use in clearing perturbations than in compassing desires. But the sophist's opinion is somewhat favoured by the assertion we last spoke of, "that good of advancement is greater than good of simple preservation", because every obtaining a desire has a show of advancing nature towards perfection; which though it be not really the case, yet motion even in a circle has a show of progression.

But the second question (as to whether a man's nature may not be capable of tranquillity of mind and vigour of fruition both), decided in the true way, makes the former superfluous. For do we not often see some minds so constituted, as to take the greatest delight in enjoying pleasures when present, and yet nevertheless little annoyed at the loss and leaving of them? So that the philosophical progression, "Enjoy not, that you may not desire; desire not, that you may not fear," is the precaution of cowardice and pusillanimity. And indeed most of the doctrines of the philosophers seem to me to be more fearful and cautionary than the nature of things requires: thus they increase the fear of death in offering to cure it; for when they would have a man's whole life to be but a discipline or preparation to die[11], they must needs make men think that it is a terrible enemy, against whom there is no end of preparing. Better says the poet (for a heathen):—

> Fortem posce animum mortis terrore carentem
> Qui finem vitæ extremum inter munera ponat
> Naturæ[12].

[9] Virg. *Æn.* vi. 7. 30:—

> Igneus est ollis vigor et cœlestis origo.

[10] Plato, *Gorgias*, p. 494.

[11] Said by Socrates in the *Phaedo*. Contrast Spinoza, *Ethica*, iv. 67.

[12] Juv. x. 357:—

> Give me a soul which can grim death defy,
> And count it Nature's privilege to die.

Bacon substitutes *finem* for the *spatium* of the original.

So have philosophers sought in all things to make men's minds too uniform and harmonical, not breaking them to contrary motions and extremes; the reason whereof I suppose to be, because they themselves were men dedicated to a private life, free from business and from the necessity of applying themselves to other duties. But men should rather imitate the wisdom of jewellers, who, if there be a grain or a cloud or an ice in a jewel, which may be ground forth without taking too much of the stone, they remove it: otherwise they will not meddle with it. And in like manner men ought so to procure serenity, as they destroy not magnanimity. And so much for Individual good.

Having, therefore, discussed self-good (which we also term "*Private*," "*Particular*," and "*Individual*" good), let us resume the good of communion, which respects and beholds society, which we may term *Duty* because the term of duty is more proper to a mind well framed and disposed towards others, as the term of virtue is applied to a mind well formed and composed in itself. This part may seem at first glance to pertain to science civil and politic, but not if it be well observed; for it concerns the regimen and government of every man over himself, and not over others. And as in architecture it is one thing to direct the framing the posts, beams, and other parts of the building, and another thing to join and fasten them; and as in mechanics it is one thing to direct how to frame an instrument or engine, and another to set it on work and employ it; so the doctrine of the conjugation of men in the state or society, differs from that which teaches them to conform and be well-disposed to the advantages thereof.

This part of duty is likewise subdivided into two parts; whereof the one treats of "the common duty of every man" as a member of a state; the other treats of "the respective or special duties of every man, in his profession, vocation, rank, and character." The first of these is extant and well laboured, as has been said; the second likewise I may report as handled dispersedly, though not digested into an entire body of science; not that I object to this manner of dispersed writing, which on the contrary in this kind of argument I acknowledge to be best. For who is there with such clearness or confidence that he can take upon him to write skilfully and accurately of the proper and relative duty of every several vocation and place? But treatises on matters of this kind which do not savour of experience, but are only drawn from a general scholastic knowledge of the subject, are for the most part empty and unprofitable. For although sometimes a looker-on may see more than a player, and there be a proverb more arrogant than sound, concerning the censure of the people on the actions of their superiors, "That the vale best discovers the hill"; yet it were much to be wished that only men of most practice and experience should meddle with such arguments; for the writing of speculative men on active matter for the most part seems to men of experience, as Phormio's arguments of the wars seemed to Hannibal, to be but dreams and dotage[13]. Only there is one vice which accompanies those who write on their own arts and professions, that they can not refrain from adorning and magnifying in excess those little Sparta's of theirs[14].

In which kind it were inexcusable not to mention (honoris causâ) your Majesty's excellent book touching the duties of a king[15], a work richly compounded of many known and secret treasures of divinity, morality, and policy, with great aspersion of all other arts, and being in my opinion one of the most sound and healthful writings that I have read; not distempered in the heat of invention, nor chilled in the coldness of negligence; not subject to fits of dizziness, and so falling into confusion and disorder; not distracted by digressions, so as to embrace in a discursive narrative things impertinent to the purpose[16]; not savouring of perfumes and paintings, as those do, who attend more to the pleasure of the reader than the nature of the argument; above all, being a book

[13] Cic. *de Orat.* lib. ii. 18.

[14] Cf. Erasm. *Adag.* ii. 5. 1.

[15] The proper title of this work is *Basilicon Doron*. It contains three books. The first is, "Of a king's Christian duetie towards God;" the second, "Of a king's duetie in his office;" and the last, "Of a king's behaviour in things indifferent."

[16] Compare the corresponding passage in the *Advancement*:—"not sick of dizziness as those are who leese themselves in their order; nor of convulsions, as those which cramp in matters impertinent".—*J. S.*

as good in spirit as in body, since it is both agreeable to truth, and apt for action. And it is moreover quite free from that vice which I have noted above (which, if it were tolerated in any, certainly it would be so in a king, writing of the authority of a king), seeing it does not exalt invidiously or above measure the height and summit of kingly power; for your Majesty has represented, not a king of Assyria, or Persia, in the glitter of outward pride and glory; but truly a Moses or a David, that is, shepherds of their people. Neither can I ever forget the observation so truly worthy of a king, which your Majesty delivered [17], in the same sacred spirit of government, in deciding a great cause of judicature; which was, "That kings ruled by the laws of their kingdoms, as God did by the laws of Nature, and ought as rarely to put in use their supreme prerogative, as God does his power of working miracles". And yet, notwithstanding, in your other book of a free monarchy [18] it well appears that you no less perceive and understand the plenitude of the power of a king, and the ultimities (as the schoolmen say) of regal rights, than the circle and bounds of his office and duty. Thus have I presumed to allege this excellent writing of your Majesty, as a prime or eminent example of treatises concerning special and respective duties; wherein I should have said as much if it had been written by any king a thousand years since. Nor am I moved with that rule of manners which is usually laid down, "that one should not praise in presence"; provided that the praise be not beyond the truth, and bestowed unseasonably, or without occasion. Surely Cicero, in that brilliant oration for Marcellus, was but exhibiting an excellent picture of Cæsar's praises, though he was speaking before his face. And the like did Pliny the younger to Trajan [19].

But to return to our purpose. There belongs further to the handling of this part, touching the respective duties of vocations and professions, a relative or opposite doctrine touching the frauds, cautions, impostures, and vices of every profession; for corruptions and vices are opposed to duties and virtues. And it is true that these are not altogether passed over, but there are many treatises and writings in which they are touched upon at least in passing; but how? rather in a satire, and cynically after the manner of Lucian, than seriously and wisely. For men have rather sought by wit to traduce much that is good or useful in professions, and expose it to ridicule, than to discover and sever that which is vicious and corrupt. But Solomon says well, "A scorner seeks wisdom, and finds it not, but knowledge offers itself unto him that is desirous thereof [20]"; for he who comes to seek after knowledge with a mind to scorn and censure will be sure to find matter enough for his humour, but very little for his instruction. But the serious handling of this argument with integrity and sincerity ought, as it appears to me, to be reckoned among the best fortifications for honesty and virtue. For as the fable goes of the basilisk, that if he see you first, you die for it, but if you see him first, he dies; so is it with deceits, impostures, and evil arts, which, if they be first espied, they lose their life, but if they prevent, they endanger; so that we are much beholden to Machiavelli and other writers of that class, who openly and unfeignedly declare or describe what men do, and not what they ought to do. For it is not possible to join the wisdom of the serpent with the innocence of the dove, except men be perfectly acquainted with the nature of evil itself; for without this, virtue is open and unfenced; nay, a virtuous and honest man can do no good upon those that are wicked, to correct and reclaim them, without first exploring all the depths and recesses of their malice [21]. For

[17] Probably in the case of Sir Francis Goodwin in 1604, when the question was whether it belonged to the House of Commons or the Court of Chancery to judge of the validity of an election.—*J. S.*

[18] This second work of James's is, "The Trew Law of Free Monarchies, or the reciprock and mutual duetie betwixt a free King and his naturall Subjects," free being nearly equivalent to absolute. This work was at first published anonymously, but is included in the edition of King James's works which appeared in 1616.

[19] In his *Panegyrica*.

[20] Prov. xiv. 6.

[21] Compare Charron *De la Sagesse*, liv. ii. c. 10. :—"Il faut temperer et marier l'inno-

men of corrupted minds presuppose that honesty grows out of an ignorance or simplicity of manners, and believing of preachers, schoolmasters, books, moral precepts, common discourses, and opinions; so as, except they plainly perceive that you know as much of their corrupt opinions and depraved principles as they do themselves, they despise all honesty of manners and counsel; according to the excellent proverb of Solomon, "The fool receives not the word of the wise, unless thou speakest the very things that are in his heart [22]". But this part, touching respective cautions and vices, we set down as deficient, and will call it by the name of "*Serious Satire*", or the *Treatise of the Inner Nature of Things.*

Unto this part, touching respective duty, do also appertain the mutual duties between husband and wife, parent and child, master and servant; so likewise the laws of friendship and gratitude, the civil bonds of companies, colleges, neighbourhood, and the like; but it must ever be kept in mind, that they are here handled, not as they are parts of civil society (for that is referred to policy), but as to the framing and predisposing of the minds of particular persons towards the preservation of those bonds of society.

The knowledge concerning good respecting Society (as well as that which respects Individual good) handles it not simply alone, but comparatively; whereunto belongs the weighing of duties between person and person, case and case, particular and public, present and future; as we see in the stern and severe proceeding of Lucius Brutus against his own sons, how it was generally extolled to the sky; and yet what did another say of it? "It was an unhappy deed, whatever posterity might say of it [23]".

And we see the same in that supper to which Marcus Brutus, Caius Cassius, and others were invited. When to make trial of their opinions touching the intended murder of Cæsar, the question was cunningly raised, "whether the killing of a tyrant were lawful," they were divided in opinion; some holding that it was clearly lawful, for servitude was the extreme of evils; others, not so, for tyranny was better than a civil war; while a third set affirmed, according to the doctrine of Epicurus, that it was unfit for wise men to endanger themselves in the cause of fools [24]. But there are a number of like cases of comparative duties; amongst which, that is most frequent where the question is, whether injustice may be committed in order to save one's country, or for some great future advantage of that kind; touching which, Jason of Thessaly used to say, "Some things must be done unjustly, that many may be done justly [25]". But the reply is good; "Present justice is in your power, for that which is to come you have no security." Men must pursue things which are good and just at present, leaving the future to the Divine Providence. And so much for the knowledge touching the exemplar and description of good.

CHAPTER III.

The Division of the Doctrine concerning the Culture of the Mind, into the Doctrine concerning the Characters of the Mind, the Affections, and the Remedies or Cures.—An Appendix of this same Doctrine, touching the Congruity between the Good of the Mind and the Good of the Body.

Now therefore that I have spoken of the fruit of life (understanding it in a philosophical sense), it remains to speak of the husbandry which belongs thereto; without which the former part seems to be no better than a fair image or statue, which is beautiful to contemplate, but is without life and motion; whereunto

cence colombine en n'offensant personne avec la prudence et astuce serpentine en se tenant sur ses gardes et se preservant des finesses, trahisons, et ambuches d'autrui." The whole chapter is worth comparing with Bacon's remarks on the art of self-advancement.

[22] Prov. xviii. 2. The words are accurately quoted from the Vulgate: the authorised version is wholly dissimilar.

[23] Virg. *Æn.* vi. 823: Infelix, utcumque ferent ea facta minores.

[24] Plutarch in *Brut.*

[25] Plut. *Reip. ger. Præcep.* 817.

Aristotle eloquently subscribes in these words, "It is necessary then to speak of virtue, both what it is, and whence it proceeds, for it were almost useless to know what virtue is, but to be ignorant of the ways and means of acquiring it; therefore we must inquire not only to what kind virtue belongs, but also how it may be obtained; for we wish both to be acquainted with the thing itself, and to gain possession of it; wherein we shall not fully succeed, unless we know both the whence and the how[1]". In such express words and with such iteration does he inculcate this part, although he does not himself pursue it. This likewise it is which Cicero bestows on Cato the younger as no ordinary praise; that he had applied himself to philosophy, "not for the sake of disputing as most do, but for the sake of living according to its rules[2]". And although through the negligence of our times, wherein few men take any care touching the cultivation and disposition of the mind, and the framing of their life to any fixed rule, (as Seneca[3] excellently says, "Everyone takes thought about the parts of life, no one about the whole"): this part may seem superfluous, yet I will not on that account pass it by untouched, but rather conclude with that aphorism of Hippocrates, "That they who are sick and feel no pain are sick in their mind[4]"; they need medicine not only to assuage the disease, but to awake the sense. And if it be objected that the cure of men's minds belongs to sacred divinity, it is most true; but yet moral philosophy may be admitted into the train of theology, as a wise servant and faithful handmaid to be ready at her beck to minister to her service and requirements. For as the Psalm says, "That the eyes of the handmaid look perpetually to the hands of her mistress[5]", and yet no doubt many things are left to the care and discretion of the handmaid; so ought moral philosophy to give a constant attention to the doctrines of divinity, and be obedient to them, and yet so as it may yield of itself within its own limits many sound and profitable directions.

This part therefore, when I recall the excellency thereof, I cannot but find exceeding strange that it is not yet reduced to written inquiry. Wherefore seeing I set it down among the deficients, I will according to my custom sketch out some of the heads and points thereof.

First therefore in this, as in all things which are practical, we ought to cast up our account what is in our power and what not; for the one may be dealt with by way of alteration, but the other by way of application only. The husbandman cannot command either the nature of the soil or the seasons of the weather; no more can the physician either the natural temper and constitution of the patient, or the variety of accidents. Now in the culture of the mind and the cure for its diseases three things are to be considered; the different characters of dispositions, the affections, and the remedies; just as in the treatment of the body three things are observed; the complexion or constitution of the sick man, the disease, and the cure; but of these three, only the last is in our power, the two former are not. Yet the inquiry into things beyond our power ought to be as careful as into those within it; for the exact and distinct knowledge thereof is the groundwork of the doctrine of remedies, that they may be more conveniently and successfully applied; and we cannot fit a garment, except we first take measure of the body.

So then the first article of this knowledge is concerned with *the different characters of natures and dispositions*. And we are not here speaking of the common inclinations either to virtues and vices, or to disorders and passions, but of those which are more profound and radical. And in truth I cannot sometimes but wonder that this part of knowledge should for the most part be omitted both in Morality and Policy, considering it might shed such a ray of light on both sciences. In the traditions of astrology men's natures and dispositions are not unaptly distinguished according to the predominances of the planets; for some are naturally formed for contemplation, others for business, others for war, others for advancement of fortune, others for love, others for the arts, others for a varied kind of life; so among the poets (heroic, satiric, tragic, comic) are everywhere

[1] Pro Muræna, c. 30.
[2] Magn. Mor. lib. i. 1.
[3] Sen. Ep. 71.
[4] Aph. ii. 6.
[5] Psalm cxxiii. 2.

interspersed representations of characters, though generally exaggerated and surpassing the truth. And this argument touching the different characters of dispositions, is one of those subjects in which the common discourse of men (as sometimes though very rarely happens) is wiser than books. But far the best provision and material for this treatise is to be gained from the wiser sort of historians, not only from the commemorations which they commonly add on recording the deaths of illustrious persons, but much more from the entire body of history as often as such a person enters upon the stage; for a character so worked into the narrative gives a better idea of the man, than any formal criticism and review can; such is that of Africanus and Cato the Elder in Livy, of Tiberius, and Claudius, and Nero in Tacitus, of Septimius Severus in Herodian, of Louis XI., King of France, in Philip de Comines, of Ferdinand of Spain, the Cæsar Maximilian, and the Popes Leo and Clement in Francesco Guicciardini. For these writers, having the images of those persons whom they have selected to describe constantly before their eyes, hardly ever make mention of any of their actions without inserting something concerning their nature. So some of the relations which I have met with touching the conclaves of the popes, present good characters of the Cardinals [6]; as the letters of ambassadors do likewise of the councillors of princes. Wherefore out of these materials (which are surely rich and abundant) let a full and careful treatise be constructed. Not however that I would have these characters presented in ethics (as we find them in history or poetry or even in common discourse), in the shape of complete individual portraits, but rather the several features and simple lineaments of which they are composed, and by the various combinations and arrangements of which all characters whatever are made up, showing how many, and of what nature these are, and how connected and subordinate one to another; that so we may have a scientific and accurate dissection of minds and characters, and the secret dispositions of particular men may be revealed; and that from the knowledge thereof better rules may be framed for the treatment of the mind.

And not only should the characters of dispositions which are impressed by nature be received into this treatise, but those also which are imposed on the mind by sex, by age, by region, by health and sickness, by beauty and deformity, and the like; and again, those which are caused by fortune, as sovereignty, nobility, obscure birth, riches, want, magistracy, privateness, prosperity, adversity, and the like. For we see that Plautus makes it a wonder to see an old man beneficent, "His beneficence is that of a young man [7]". St. Paul advising that severity of discipline should be used towards the Cretans ("Reproach them severely"), accuses the disposition of their country; citing the poet's censure, "the Cretans are always liars, evil beasts, slow bellies [8]". Sallust notes that it is usual with kings to desire contradictories, "the desires of kings, as they are violent, so are they generally changeable and often contrary to themselves [9]." Tacitus observes that honours and fortune more often alter men's dispositions to the worse than to the better; "Vespasian alone was changed for the better [10]". Pindar makes the observation that great and sudden good fortune for the most part defeats and enervates men's minds. "There be, that are not able to digest great prosperity [11]". The Psalm shows it is more easy to keep a measure in the enjoying of fortune, than in the increase thereof, "If riches increase, set not your heart upon them [12]". These observations and the like I deny not but are touched a little by Aristotle in his Rhetoric, and here and there in some other men's writings, but they have never been incorporated into moral philosophy, to which they principally appertain; no less than the knowledge of the diversity of grounds and moulds does to agriculture, and the knowledge

[6] For an account of the writings here referred to, which were generally composed by the "Conclavisti," but sometimes by one of the Cardinals, see Ranke's work "*Die Römischen Päpste*, sect. 5. of the Appendix. Among the *Litteræ Legatorum*, those of the Venetians are especially valuable. They are, properly speaking, reports made to the Senate on the ambassador's return.

[7] Mil. Glor. iii. 1. 40.

[8] Ep. Tit. i. 12. The poet referred to is Epimenides.

[9] In Jugurth. c. 113.

[10] Tac. *Hist.* i. 50.

[11] Cf. Pind. *Olymp.* i. 88.

[12] Psalm lxii. 10.

of the diversity of complexions and constitutions does to medicine. It should be done however now, except we mean to follow the indiscretion of empirics, who minister the same medicines to all patients of every constitution.

Next in order is the *knowledge touching the affections and perturbations*, which are, as I have said, the diseases of the mind. For as the ancient politicians in popular states were wont to compare the people to the sea, and the orators to the winds; because as the sea would of itself be calm and quiet, if the winds did not move and trouble it; so the people would be peaceable and tractable if the seditious orators did not set them in working and agitation [13]: so it may be fitly said, that the mind in its own nature would be temperate and staid; if the affections, as winds, did not put it into tumult and perturbation. And here again I find it strange, that Aristotle should have written divers volumes of ethics, and never handled the affections, as a principal portion thereof; yet in his Rhetoric, where they are considered but collaterally and in a second degree (as they may be moved and excited by speech), he finds a place for them, and handles them acutely and well, for the quantity thereof. For it is not his disputations about pleasure and pain that can satisfy this inquiry: no more than he who should generally handle the nature of light can be said to handle the nature of particular colours; for pleasure and pain are to the particular affections, as light is to particular colours. Better pains, I suppose, had the Stoics taken in this argument, as far as I can gather by that which remains of them; but yet I conceive it was rather in subtlety of definitions than in any full and ample description. So likewise I find some particular writings of an elegant nature, touching some of the affections, as of anger, of tenderness of countenance, and some few others [14]. But to speak the real truth, the poets and writers of history are the best doctors of this knowledge, where we may find painted forth with great life and dissected, how affections are kindled and excited, and how pacified and restrained, and how again contained from act and further degree; how they disclose themselves, though repressed and concealed; how they work; how they vary; how they are enwrapped one within another; how they fight and encounter one with another; and many other particularities of this kind; amongst which this last is of special use in moral and civil matters; how, I say, to set affection against affection, and to use the aid of one to master another; like hunters and fowlers who use to hunt beast with beast, and catch bird with bird, which otherwise perhaps without their aid man of himself could not so easily contrive: upon which foundation is erected that excellent and general use in civil government of reward and punishment, whereon commonwealths lean; seeing those predominant affections of fear and hope suppress and bridle all the rest. For as in the government of states it is sometimes necessary to bridle one faction with another, so it is in the internal government of the mind.

I now come to those points which are within our own command, and have operation on the mind to affect and influence the will and appetite, and so have great power in altering manners; wherein philosophers ought carefully and actively to have inquired of the strength and energy of custom, exercise, habit, education, imitation, emulation, company, friendship, praise, reproof, exhortation, fame, laws, books, studies, and the like. For these are the things that rule in morals; these the agents by which the mind is affected and disposed; and the ingredients of which are compounded the medicines to preserve or recover the health of the mind, as far as it can be done by human remedies; of which number I will select some one or two, upon which to insist, as patterns of the rest. I will therefore make a few observations on *Custom and Habit*.

The opinion of Aristotle seems to me to savour of negligence and narrowness of contemplation, when he asserts that custom has no power over those actions which are natural; using for example, "that if a stone be thrown up a thousand times, it will not learn to ascend of itself; and that by often seeing or hearing we

[13] Cicero *Pro Cluent.* c. 49.

[14] Bacon was probably thinking of Plutarch's tract On Shamefacedness, which is I think the only one on this subject which has come down to us from antiquity. On anger there are two special treatises; Plutarch's and Seneca's.

do not learn to see or hear the better " [15]. For though this principle be true in some things, wherein nature is peremptory (the reasons whereof we have not now leisure to discuss), yet it is otherwise in things wherein nature admits, within certain limits, intension and remission. For he might see that a tight glove will come on more easily with use ; that a wand by use and continuance will be bent contrary to its natural growth, and after a while will continue in the same position ; that by use of the voice it becomes stronger and louder ; that by custom we can better bear heat and cold, and the like ; which two latter examples have a nearer resemblance to the subject, than those instances which he alleges. But however it be, the more true it is that virtues and vices consist in habit, he ought so much the more to have taught the rules for acquiring or removing that habit ; for there may be many precepts for the wise ordering of the exercises of the mind, as well as of the body ; whereof I will recite a few.

The first shall be, that we beware we take not at the first either a greater or a smaller task than the case requires. For if too great a burden be imposed, in a diffident nature you discourage ; in a confident nature you breed an opinion, whereby a man promises to himself more than he is able to perform, which produces sloth ; and in both these natures the trial will fail to satisfy the expectation, a thing which ever discourages and confounds the mind. But if the tasks be too weak, progress will be much retarded.

The second precept shall be, that to practise any faculty by which a habit may be acquired, two several times should be observed ; the one, when the mind is best disposed, the other when it is worst disposed ; that by the one, you may gain a great step, by the other, you may through strenuous exertion work out the knots and obstacles of the mind, and so make the middle times the more easy and pleasant.

The third precept shall be that which Aristotle mentions by the way. " To bear ever with all our strength, so it be without vice, towards the contrary extreme of that whereunto we are by nature inclined [16] " ; as when we row against the stream, or straighten a wand by bending it contrary to its natural crookedness.

The fourth precept depends on that axiom, which is most true ; that the mind is brought to anything with more sweetness and happiness, if that whereunto you pretend be not first in the intention, but be obtained as it were by the way while you are attending to something else ; because of the natural hatred of the mind against necessity and constraint. Many other useful precepts there are, touching the regulation of custom ; for custom wisely and skilfully conducted proves indeed, according to the saying, a second nature ; but governed unskilfully and by chance it will be but an ape of nature, imitating nothing to the life, but bringing forth only that which is lame and counterfeit.

So, if we should handle books and studies and what influence and operation they should have upon manners, are there not divers precepts and directions of great profit appertaining thereunto ? Did not one of the fathers [17], in great indignation, call poesy " the wine of demons," because it engenders temptations, desires, and vain opinions ? Is not the opinion of Aristotle very wise and worthy to be regarded, " that young men are not fit auditors of moral philosophy " [18], because the boiling heat of their affections is not yet settled, nor tempered with time and experience ? And to say the truth, does it not hereof come that those excellent books and discourses of the ancient writers (whereby they have per-

[15] Nic. Eth. ii. 1. [16] Nic. Eth. ii. 9.

[17] St. Augustine. Cf. Agrippa *de Incert.* c. 4.

[18] Nic. Eth. i. 1. Aristotle, however, speaks not of moral but of political philosophy. It is interesting to observe that the error of the text, which occurs also in the *Advancement of Learning*, has been followed by Shakespeare in *Troilus and Cressida* :—

" Not much
Unlike young men, whom Aristotle thought
Unfit to hear *moral* philosophy."

See Hector's speech in the second scene of the second act.

suaded unto virtue most effectually by representing her in state and majesty, and popular opinions against virtue as clad in parasites' cloaks, fit to be scorned and derided) are of so little effect towards honesty of life and amendment of evil manners, because they are not read and revolved by men in their mature and settled years, but confined almost to boys and beginners. But is it not true also that much less are young men fit auditors of matters of policy, till they have been thoroughly seasoned in religion, morality, and duty, lest their judgments be corrupted and made apt to think that there are no true and real differences of things; but all things are to be measured by utility and fortune; as the poet says:—

Prosperum et felix scelus virtus vocatur[19];

and again,

Ille crucem pretium sceleris tulit, hic diadema[20];

which the poets speak satirically and in indignation, but some books of policy speak seriously and positively. For so it pleases Machiavelli[21] to say "That if Cæsar had been overthrown, he would have been more odious than ever was Catiline;" as if there had been no difference but in fortune alone between a very fury of lust and blood, and the most excellent spirit (his ambition reserved) of the unconverted world. And how necessary it is for men to be fully imbued with pious and moral knowledge before they take any part in politics we see from this; that they who are brought up from their infancy in the courts of kings and affairs of state scarce ever attain to a deep and sincere honesty of manners; how much less chance have they then, if to this be added the like discipline in books? Again, is there not a caution likewise to be given of the doctrines of moralities themselves, at least some kinds of them, lest they make men too precise, arrogant, and incompatible? as Cicero says of Marcus Cato, "The divine and noble qualities we see in him, be sure are his own; the defects which we sometimes find, proceed not from his nature, but from his instructors[22]". Many other axioms there are touching those properties which studies and books infuse into men's minds; for the saying is true, "that studies pass into manners[23]", as may likewise be said of all those other points, of company, fame, laws, and the rest, which I a little before recited.

But there is a kind of culture of the mind, which seems yet more accurate and elaborate than the rest, and is built upon this ground; that the minds of all men are at some times in a state more perfect, and at other times in a state more depraved. The purpose therefore and intention of this practice is to cherish the good hours of the mind, and to obliterate and take forth the evil out of the calendar. The fixing of the good has been practised by two means; vows or constant resolutions of the mind, and observances or exercises, which are not to be regarded so much in themselves, as because they keep the mind in continual duty and obedience. The obliteration of the evil can likewise be practised by two means; some kind of redemption or expiration of that which is past, and an inception or new account of life for the time to come. But this part seems clearly to belong to religion, and justly so; for all true and sincere moral philosophy, as was said before, is but a handmaid to religion.

Wherefore I will conclude this part of the culture of the mind with that remedy, which is of all other means the most compendious and summary; and again the most noble and effectual to the reducing of the mind into virtue, and placing it in the state nearest to perfection; which is, *the electing and propounding unto a man's self good and virtuous ends of his life and actions; such as may be in a reason-*

[19] Senec. *Herc. Fur.* 251.:—
Successful guilt will borrow virtue's name.

[20] Juv. xiii. 105.:—
Success is all; and for the self-same thing,
One dies a felon, the other lives a king.

[21] Machiavelli, *Discorsi*, i. 10. [22] Cic. *Pro Murænâ*, c. 29. [23] Ovid. *Epist.* xv. 83.

able sort within his compass to attain. For if these two things be supposed, that a man set before him honest and good ends, and again that his mind be resolute and constant to pursue and obtain them, it will follow that his mind shall address and mould itself to all virtues at once. And this indeed is like the work of Nature; whereas the other courses I have mentioned are like the work of the hand. For as when a carver makes an image, he shapes only that part whereon he works, and not the rest (as if he be upon the face, that part which shall be the body is but a rude and unshaped stone still, till such time as he comes to it); but contrariwise, when Nature makes a flower or living creature, she forms and produces rudiments of all the parts at one time; so in obtaining virtue by habit, while we practise temperance, we do not advance much in fortitude, nor the like; but when we dedicate and apply ourselves entirely to good and honest ends, what virtue soever the pursuit and passage towards those ends suggests and enjoins, we shall find ourselves invested with a precedent disposition and propensity to conform thereto. And this is the state of mind excellently described by Aristotle, and distinguished by him as having a character not of virtue but of divinity; his words are these: "To brutality we may not unaptly oppose that heroic or divine virtue which is above humanity [24]"; and a little after, "For as beasts are incapable of virtue or vice, so likewise is the Deity; for this latter state is something higher than virtue, as the former is somewhat other than vice". Again, Pliny the younger using the license of heathen grandiloquence sets forth the virtue of Trajan, not as an imitation, but rather as a pattern of the divine, where he says, "That men needed not to make any other prayers to the gods, but that they would show themselves as good and kind lords to them, as Trajan had been [25]". But these be heathen and profane passages, which grasp at shadows greater than the substance; but the true religion and holy Christian faith lays hold of the reality itself, by imprinting upon men's souls, Charity, which is excellently called "the bond of Perfection [26]", because it comprehends and fastens all virtues together. And it is elegantly said by Menander [27] of sensual love (which is but a false imitation of divine love), "That love is a better teacher for human life than a left-handed sophist," whereby he means that comeliness of manner is better taught by love than by a clumsy preceptor or sophist, whom he calls left-handed; because with all his laborious rules and precepts he cannot form a man so dexterously, nor with that facility to prize and govern himself in all things, as love can do. So certainly if a man's mind be truly inflamed with charity, it raises him to greater perfection than all the doctrines of morality can do; which is but a sophist in comparison of the other. Nay further, as Xenophon truly observed, "that all other affections though they raise the mind yet they distort and disorder it by their ecstasies and excesses, but only love at the same time exalts and composes it [28]"; so all the other qualities which we admire in man, though they advance nature, are yet subject to excess; whereas Charity alone admits of no excess. The Angels aspiring to be like God in power, transgressed and fell: "I will ascend, and be like unto the most High [29]". Man aspiring to be like God in knowledge, transgressed and fell: "Ye shall be as gods, knowing good and evil [30]"; but by aspiring to a similitude of God in goodness or love, neither angel or man ever transgressed or shall transgress; for unto that imitation we are called, "Love your enemies, bless them which hate you, and pray for them that despitefully use you and persecute you, that ye may be children of your Father who is in heaven, who makes his sun to rise on the evil and the good, and sends his rain on the just and the unjust [31]". So in the first platform of the divine nature itself, the heathen religion speaks thus, "Optimus Maximus," but the sacred Scriptures thus, "His mercy is over all His works [32]".

Here then I conclude this part of moral knowledge concerning the Georgics of the mind, wherein if any man, from viewing the parts thereof which I have enumerated, judge that my labour is but to collect into an art or science that which has been omitted by other writers as matter of common sense and ex-

[24] Nic. Eth. vii. 1. [25] Pliny, *Paneg.* 1. c. 74.
[26] Coloss. iii. 14. [27] Anaxandrides, not Menander. [28] Xenoph. *Sympos.*
[29] Isaiah, xiv. 14. [30] Gen. iii. 5. [31] St. Matt. v. 44. [32] Psalm cxlv. 9.

perience, and sufficiently clear and self-evident, he is welcome to his opinion; but in the mean while let him remember that I am in pursuit, as I said at first, not of beauty but of utility and truth: and let him withal call to mind the ancient parable of the two gates of sleep:—

> Sunt geminæ Somni portæ, quarum altera fertur
> Cornea, qua veris facilis datur exitus umbris;
> Altera candenti perfecta nitens elephanto,
> Sed falsa ad cœlum mittunt insomnia Manes[33].

Great no doubt is the magnificence of the ivory gate, but the true dreams pass through the gate of horn.

To these observations concerning moral philosophy may be added, *That there seems to be a relation or conformity between the good of the mind and the good of the body*. For as I said that the good of the body consisted of health, beauty, strength and pleasure; so the good of the mind considered according to the precepts of moral knowledge tends to this; to make the mind sound and without perturbation; beautiful and graced with decency; and strong and agile for all the duties of life; lastly, not stupid, but retaining a lively sense of pleasure and comfort in an honest way. These three as in the body so in the mind seldom all meet together. For it is easy to observe that many have strength of wit and courage, who are yet disordered by perturbations and have little beauty and decency in their manners; some again have an elegance and fineness of carriage, who have neither honesty of will nor strength for action; and some again have honest and reformed minds who can neither become themselves nor manage business: while others, though perhaps endowed with all these three, yet from a Stoical severity and insensibility have no pleasure in the virtuous actions which they practise. But though it happen that of these four two or three of them sometimes meet, yet the meeting of them all is, as I have said, very rare. I have now handled that general part of human philosophy which contemplates man as he consists of body and spirit, but segregate and apart from society.

[33] Virg. *Æn.* vi. 894:—

> Two gates the entrance of Sleep's house adorn:
> Of ivory one, the other simple horn;
> Through horn a crowd of real visions streams,
> Through ivory portals pass delusive dreams.

Book VIII.

CHAPTER I.

The Division of Civil Knowledge into the Doctrine concerning Conversation, Negotiation, and Empire or State Government.

THERE is an old story, most excellent king, that many philosophers being met together in the presence of the ambassador of a foreign prince, each endeavouring to give a sample of his wisdom, that the ambassador might be able to make a report of the wonderful wisdom of Greece ; one of them remained silent and propounded nothing ; insomuch that the ambassador turning to him, said, " What have you to say for me to report ? " To whom he answered, " Tell your king that you have found a man in Greece, who knew how to hold his tongue [1] ". And in truth, in this synopsis of the arts I have forgotten to mention the art of silence, which (since it is commonly deficient) I will now teach by my own example. For since the course of the argument has now brought me down to that point, that I should presently handle the art of government ; and since I am writing to so great a king who is such a master in that art, wherein he has been trained from his cradle ; and since I cannot altogether forget what position I have held under your majesty ; I thought that I should better approve myself by silence on such a matter before your majesty, than by speech. Cicero indeed makes mention not only of an art, but of a kind of eloquence in silence ; for in one of his letters to Atticus, after relating a conversation between himself and another person on both sides of a subject, he writes, " Here I borrowed part of your eloquence, for I held my tongue [2] ". Pindar again (whose peculiar gift it was to surprise men's minds with some striking expression, as with a magic rod), utters some such saying as this, " Silence sometimes says more than speech [3] ". Wherefore in this part I have determined to be silent, or to be very brief, which is next thing to silence ; but before I come to the arts of government, I must first make some observations touching the other parts of civil knowledge.

Civil knowledge is conversant about a subject, which of all others is most immersed in matter, and with most difficulty reduced to axioms. Nevertheless there are some circumstances to relieve this difficulty ; for first, as Cato the Censor used to say of the Romans, " that they were like sheep, for that a man might better drive a flock of them, than one of them ; for in a flock, if you could but get some few of them to go right, the rest would follow [4] " ; so in that respect the duty of moral philosophy is more difficult than that of policy. Secondly, moral philosophy propounds to itself to imbue and endow the mind with internal goodness ; but civil knowledge requires only an external goodness, for that suffices for society. And therefore it often comes to pass that there be evil times in good governments ; as in the sacred history we find it said more than once in speaking of good and pious kings, " Howbeit the people had not yet directed their heart aright to the Lord God of their Fathers [5] " ; wherefore in this respect also the office of moral philosophy is more difficult. Thirdly, states as great engines are moved slowly and not without great efforts, whence they are not so soon put out of frame ; for as in Egypt the seven good years sustained the seven bad, so in states the good government of previous years prevents the errors of succeeding times from causing immediate ruin ; but the resolutions and morality of parti-

[1] This story is told of Zeno. See Plut. *de Garrulitate*, and Diog. Laert. vii. 24.
[2] Cic. *Ep. ad Attic.* xii. 42. The person in question was his nephew, Q. Cicero.
[3] Pind. *Nem.* v. 32. [4] Plut. in *Cato*, c. 8. [5] 2 Chron. xx. 33.

cular persons are more suddenly subverted. And this makes moral knowledge more difficult, but civil knowledge more easy.

Civil knowledge has three parts, according to the three summary actions of Society; *the knowledge of conversation, the knowledge of negotiation*, and *the knowledge of empire or government*. For there are three kinds of good which men seek in society, comfort against solitude, assistance in business, and protection against injuries; and they are three wisdoms of divers natures, which are often separate; wisdom of behaviour, wisdom of business, and wisdom of state.

The wisdom of conversation ought certainly not to be overmuch affected, but much less despised; for a wise management thereof has not only a grace and honour in itself, but an important influence in business and government. For as action in an orator, though an external quality, is held of such account as even to be preferred to those other parts which appear more important and internal; so in a man of business conversation and the management thereof, though employed on external objects, finds, if not the highest, yet at all events an eminent place. For look what an effect is produced by the countenance and the carriage of it. Well says the poet,

Nec vultu destrue verba tuo[6].

For a man may destroy and betray the force of his words by his countenance; nay, and the effect of his deeds also, if we believe Cicero; who in recommending to his brother affability towards the provincials, said that it did not so much consist in affording them easy access, as in receiving them with a courteous and open countenance, "It is nothing to have your door open, if your countenance be shut[7]". So we see Atticus before the first interview between Cæsar and Cicero, the war still depending, carefully and seriously advised Cicero touching the composing and ordering of his countenance and gesture[8]. And if the government of the face and countenance alone be of such effect; much more is that of the speech and other carriage appertaining to conversation. Indeed all grace and dignity of behaviour may be summed up in the even balancing of our own dignity and that of others, as has been well expressed by Livy, (though not meant for this purpose) in that description which he gives of personal character. "Lest I should appear (says he) either arrogant or servile, whereof the one were to forget the liberty of others, the other to forget my own[9]". On the other side, if behaviour and outward carriage be intended too much it may pass into a deformed and spurious affectation. "And then, what is more uncomely than to bring the manners of the stage into the business of life?" And even if it proceed not to that faulty extreme, yet too much time is consumed in these frivolous matters, and the mind is employed more than is right in the care of them. And therefore as in the universities preceptors use to advise young students from too much company-keeping, by saying, "Friends are the thieves of time"; so certainly the constant attention of the mind to the discretion of the behaviour is a great thief of more serious meditation. Again such as are accomplished in urbanity, and seem as formed by nature for that alone, generally find satisfaction enough therein, and seldom aspire to higher and more solid virtue; whereas those who are conscious of a defect in this point seek comeliness by reputation; for where reputation is, there almost everything is becoming; but where that is not, it must be supplied by manners and behaviour. Again

[6] Ovid, *De Art. Am.* ii. 312:—

Let not your looks your words betray.

[7] No such remark occurs in the letter ofadvice which Marcus Cicero wrote to his brother Quintus, when the latter was about to take possession of his province. But in Quintus's tract *De Petitione Consulatûs* in which he gives his brother advice as to his conduct in canvassing for the consulship, we find the antithesis quoted in the text, though somewhat differently worded. But of course the passage in which it occurs has no reference to any class of "provinciales."

[8] See Cicero, *Ep. ad Att.* ix. 12; and compare the eighteenth letter of the same book, in which the interview with Cæsar is described.

[9] Livy, xxiii. 12.

there is no greater nor more common impediment of action than an overcurious observance of external decency, and the attendant of decency, which is an anxious watching of Time and Season. For as Solomon well observes, "He that regards the winds does not sow, and he that regards the clouds does not reap [10]": a man must make his opportunity as oft as find it. To conclude, this behaviour is as the garment of the mind, and ought to have the conditions of a garment. For first, it ought to be made in fashion; secondly it should not be too curious or costly; thirdly, it ought to be so framed as to best set forth any virtue of the mind, and supply and hide any deformity; lastly, and above all, it ought not be too strait, so as to confine the mind and interfere with its freedom in business and action. But this part of civil knowledge touching conversation has been elegantly handled, and therefore I cannot report it for deficient.

CHAPTER II.

The Division of the Doctrine concerning Negotiation into the Doctrine concerning Scattered Occasions and the Doctrine concerning Advancement in Life.—Example of the Doctrine concerning Scattered Occasions from some of the Proverbs of Solomon.—Precepts concerning Advancement in Life.

THE Doctrine concerning Negotiation is divided into *the Doctrine concerning Scattered Occasions*, and *the Doctrine concerning Advancement in Life*; whereof the one comprises all variety of business, and is as it were the secretary for the whole department of life; the other merely selects and suggests such things as relate to the improvement of a man's own fortune, and may serve each man for a private notebook or register of his own affairs. But before I descend to the species, I will make some preparatory remarks touching the doctrine concerning negotiation in general. The science of negotiation has not hitherto been handled in proportion to the importance of the subject, to the great derogation of learning and the professors thereof. For from this root springs chiefly that evil, with which the learned have been branded; "*That there is no great concurrence between learning and practical wisdom*". For if it be rightly observed, of the three wisdoms which we have set down to pertain to civil life, the wisdom of behaviour is by learned men for the most part despised, as a thing servile, and moreover an enemy to meditation. For wisdom of government, it is true that as often as learned men are called to the helm, they acquit themselves well, but that happens to few. But for the wisdom of business (of which I am now speaking), wherein man's life is most conversant, there are no books at all written of it, except some few civil advertisements collected in one or two little volumes, which have no proportion to the magnitude of the subject. For if books were written of this as of the other, I doubt not but learned men with but little experience would far excel men of long experience without learning, and outshoot them (as they say) in their own bow.

Neither is there any reason to fear that the matter of this knowledge should be so variable that it falls not under precept; for it is much less infinite than that science of government, which notwithstanding we see is excellently laboured and reduced. Of this kind of wisdom it seems some of the ancient Romans in the best times were professors: for Cicero reports that a little before his age senators who had most name and opinion for wisdom and practice in affairs (as Coruncanius, Curius, Lælius, and many others) used to walk at certain hours in the Forum, where they might give audience to their fellow-citizens, who would consult with them not merely on subjects of law but on all sorts of business; as on the marriage of a daughter, the education of a son, the purchase of a farm, a contract, accusation, defence, and every other occasion incident to man's life [1]. Whence it appears that there is a wisdom of counsel and advice even in private causes, arising out of a universal insight and experience of the affairs of the world; which is used indeed upon particular causes, but is gathered by general observation of causes of like nature. For so we see in that book which Cicero wrote to his brother, "on Canvassing for the Consulship" [2] (being the only book of particular business that I know written by the ancients), although it especially concerned an action then

[10] Eccles. xi. 4. [1] Cicero, *De Orat.* iii. 33. [2] De Petit. Consulatûs.

on foot, yet it contained many political axioms which prescribe not only a temporary but a perpetual direction in the case of popular elections. But of this kind there is nothing any way comparable to those Aphorisms composed by Solomon the King, of whom the Scriptures testify, " that his heart was as the sands of the sea [3] " ; for as the sands of the sea encompass all the coasts of the earth, so did his wisdom embrace all things human as well as divine. But in these Aphorisms, besides those of a theological character, there are not a few excellent civil precepts and cautions, springing from the inmost recesses of wisdom and extending to much variety of occasions. Wherefore seeing I set down this knowledge of scattered occasions (which is the first part of the knowledge touching negotiation) among the deficients, I will stay awhile upon it according to my custom, and offer to consideration an example of the same, taken from the Aphorisms or Proverbs of Solomon. Nor in my opinion can I be with reason blamed for seeking a politic meaning in one of the Sacred writers ; for if those commentaries were extant which this same Solomon wrote touching the nature of things, (wherein he treated of every vegetable, from the moss upon the wall to the cedar of Lebanon, and likewise of all animals) [4], it would surely be lawful to interpret them in a natural sense ; and therefore we may here use the same liberty in matters political.

An Example of a portion of the doctrine concerning scattered occasions, *taken from some of the Proverbs of Solomon.*

PROVERB.

(1.) A soft answer turneth away wrath [5].

Explanation.

If the anger of a prince or a superior be kindled against you, and it is your turn to speak, Solomon gives two directions ; first, " that an answer be made," and secondly, " that it be soft " ; the former contains three precepts. First, to beware of a sullen and obstinate silence, which either takes the fault entirely on yourself, as if you had no answer to make ; or secretly impugns your superior of injustice, insinuating that his ears are not open to a defence, though a just one. Secondly, to beware of postponing the matter and demanding another time for defence ; which either conveys the same impression as the preceding one, that your superior is carried away by too great an excitement of temper ; or plainly intimates that having no answer ready you are meditating a false and artificial defence. Wherefore it will ever be the best course to bring forward something in excuse directly as the occasion arises. Thirdly, that an answer at all events be made ; not a simple confession or submission, but with a mixture of defence and excuse ; for a different course is unsafe, except with very generous and noble characters, which are extremely rare. It follows in the other precept, that the answer be soft, not harsh or rough.

PROVERB.

(2.) A wise servant shall have rule over a foolish son, and shall have part of the inheritance among the brethren [6].

Explanation.

In all disordered and discordant families there is ever some servant or humble friend of great influence, who acts as arbiter and settles their disputes, and to whom on that account both the whole family and the master himself are subject. Such a man, if he is pursuing his own interests, foments and aggravates the family feuds ; but if he is truly faithful and upright he deserves a great reward ; even to be counted as one of the brothers, or at least to have the direction of the inheritance in trust.

PROVERB.

(3.) If a wise man contend with a fool, whether he rage or laugh, he shall find no rest [7].

[3] 1 Kings, iv. 29. [4] Kings, iv. 33. [5] Prov. xv. 1.
[6] Prov. xvii. 2. [7] Prov. xxix. 9.

Explanation.

We are often advised to avoid an unequal contest, meaning that we should not contend with those that are too strong for us. But the advice here given by Solomon is no less useful, "Not to contend with one that is unworthy"; for herein the chances are altogether unequal; seeing it is no victory to conquer, and a great disgrace to be conquered. And it makes no difference in this kind of contest, whether we take it in jest, or in scorn and contempt; for, whichever way we turn, we must lose in dignity, and can no ways quit ourselves well of it. But the worst of all is if, as Solomon says, our adversary has somewhat of the fool in him, that is, if he be bold and presumptuous.

PROVERB.

(4.) Lend not thine ear to all words that are spoken, lest thou hear thy servant curse thee [8].

Explanation.

It is scarcely credible what confusion is created in life by a useless curiosity about the things which concern us; that is, when we set to work to inquire into those secrets which when discovered produce uneasiness of mind, but are of no use to forward our designs. For first there ensues vexation and disquiet of mind, seeing all things human are full of treachery and ingratitude. And therefore if we could obtain a magic glass wherein we might view all the enmities and all the hostile designs that are at work against us, it were better for us to throw it down at once and break it to pieces; for these matters are but as the rustling of leaves, and have short duration. Secondly, this curiosity overcharges the mind with suspicions, a thing which ruins counsels, and renders them inconstant and perplexed. Thirdly, it often renders permanent those very evils which would otherwise blow over; for it is a dangerous thing to alarm the consciences of men; who, if they imagine themselves undetected, may come to a better mind; but if they perceive that they are discovered, they repel mischief with mischief. Rightly therefore was it considered great wisdom in Pompey that he burned all Sertorius's papers unperused either by himself or others [9].

PROVERB.

(5.) Poverty comes as one that travelleth, and want as an armed man [10].

Explanation.

It is elegantly described in this proverb, how the shipwreck of fortunes comes upon prodigals and those that are careless of their estates; for debt and diminution of capital come on at first slowly and step by step like a traveller, and are scarce perceived; but soon after want rushes in like an armed man, so strong and powerful as no longer to be resisted; for it was rightly said by the ancients, "that necessity was of all things the strongest [11]". Wherefore we must meet the traveller on his way, but against the armed man we must fortify.

PROVERB.

(6.) He that instructs a scorner gets to himself shame, and he that rebukes the wicked gets himself a blot [12].

Explanation.

This agrees with the command of our Saviour, "not to cast pearls before swine [13]", but a difference is made between the actions of instruction and reproof; and also between the persons of the scorner and the wicked; and lastly, there is a difference in the return; for in the former case the labour is but lost, in the latter it is repaid with a stain and blot. For when a man informs and instructs a scorner, in the first place he loses his time; and secondly, the attempt is laughed at by others as a vain thing and labour misapplied; and lastly, the scorner himself despises the knowledge which he has received. But there is greater danger in the reproval of the wicked; for not only does a wicked man lend no ear to ad-

[8] Eccles. vii. 21. [9] Plut. in Pomp. c. 20.; and in Sertor. c. 27. [10] Prov. vi. 11.
[11] Cf. Eurip. *Helena*, 513. [12] Prov. ix. 7. [13] St. Matt. vii. 6.

vice, but turns again on his reprover, whom being now made odious to him he either directly assails with abuse, or afterwards traduces to others.

PROVERB.

(7.) A wise son makes a glad father, but a foolish son is the heaviness of his mother [14].

Explanation.

Here are distinguished the domestic comforts and tribulations of a father and mother respectively, touching their children. For a wise and prudent son is of most comfort to the father, who knows the value of virtue better than the mother, and accordingly has more joy in the virtuous inclination of his son ; he may feel a satisfaction also in the course he has pursued, whereby he has brought up his son so well and implanted sound morality in him by precept and example. But the mother has most sorrow and discomfort at the ill fortune of her son, both because the affection of a mother is more gentle and tender, and because she is conscious perhaps that she has spoiled and corrupted him by her indulgence.

PROVERB.

(8.) The memory of the just is blessed, but the name of the wicked shall rot [15].

Explanation.

A distinction is here made between the character of the good and the bad after death. For when the envy which carped at the reputation of the good in their lifetime is quenched, their name forthwith shoots up and flourishes, and their praises daily increase ; but for the wicked, though their reputation through the favour of their friends and partizans last for a time, yet soon it turns into contempt, and in the end their fleeting glory changes into infamy and as it were a foul and noxious odour.

PROVERB.

(9.) He that troubles his own house shall inherit the wind [16].

Explanation.

A very useful admonition, touching domestic discords and disturbances. For many from the separation of their wives, the disinheriting of their children, the frequent changes in their family, promise to themselves great things ; as if they would thence obtain peace of mind and a better management of their affairs ; but commonly their hopes vanish into the winds. For both those changes generally turn out ill, and such disturbers of their family often experience trouble and ingratitude from those whom to the neglect of others they select and adopt ; nay further, they thus draw upon themselves ill reports and dishonourable rumours ; for it is well said by Cicero, " Every man's reputation proceeds from those of his own household [17] ". And both these evils Solomon elegantly expresses by " the inheritance of the winds ; " for both the disappointment of expectation and the raising of rumours are not unaptly compared to winds.

PROVERB.

(10.) Better is the end of a speech than the beginning thereof [18].

Explanation.

This proverb reproves a very common error, not only of those who make an especial study of words, but even of the more wise and prudent ; which is, that men are more careful of the entrances and commencement of their speeches than of the end, and study more diligently the prefaces and inducements than the conclusions and issues ; whereas for the former, they ought not indeed to neglect them, but the latter as being of far greater importance they ought to have ready prepared and arranged at hand ; considering within themselves and endeavouring as much as possible to anticipate what shall be the end of their speech, and how

[14] Prov. x. 1. [15] Prov. x. 7. [16] Prov. xi. 29. [17] De Petit. Cons. 5. [18] Eccles. vii. 8. *Vulgate.* The English version has, " Better is the end of a *thing*," etc.

their business may be advanced and ripened thereby. Nor is this all; for it is not only proper to study perorations and conclusions of such speeches as relate to the business itself, but also to be prepared with some discourse which may be conveniently and gracefully thrown in at the close, although foreign to the matter in hand. Indeed I knew two great and wise councillors on whom the weight of business principally rested, with whom it was a constant care and especial art, whenever they conferred with their princes on matters of state, not to end their discourse with matters relating to the business itself, but always by way of divertisement to draw it away to some jest or some agreeable news, and so end by washing off (as the proverb has it) their salt water discourses with fresh [19]. Nor was this the least valuable of their arts.

PROVERB.

(11.) As dead flies do cause the best ointment to stink, so does a little folly him that is in reputation for wisdom and honour [20].

Explanation.

It is a very hard and unhappy condition (as the Proverb well remarks) of men pre-eminent for virtue, that their errors, be they ever so trifling, are never excused. But as in the clearest diamond every little cloud or speck catches and displeases the eye, which in a less perfect stone would hardly be discerned; so in men of remarkable virtue the slightest faults are seen, talked of, and severely censured, which in ordinary men would either be entirely unobserved, or readily excused. Hence a little folly in a very wise man, a small offence in a very good man, a slight impropriety in a man of polite and elegant manners detracts greatly from their character and reputation; and therefore it would be no bad policy for eminent men to mingle some harmless absurdities with their actions; so that they may retain some liberty for themselves, and make small defects less distinguishable.

PROVERB.

(12.) Scornful men bring a city to destruction, but wise men turn away wrath [21].

Explanation.

It may seem strange that Solomon in his description of men formed as it were by nature for the ruin and destruction of states, should have selected the character not of a proud and insolent, not of a tyrannical and cruel, not of a rash and violent, not of a wicked and impious, not of an unjust and oppressive, not of a seditious and turbulent, not of an incontinent and sensual, not finally of a foolish and incapable person, but the character of a scorner. And this selection is worthy of the wisdom of a king who well knew how states were overthrown or preserved; for there is hardly a greater danger to kingdoms and states than that councillors or senators and those who stand at the helm should be of a scornful disposition. For such men ever undervalue dangers, that they may appear bold councillors, and insult those who make a just estimate of them, as cowards. They sneer at seasonable delays and careful discussions in consultation and deliberation, as mere matter of oratory, full of weariness, and contributing nothing to the completion of business. As for reputation, with a view to which the counsels of princes ought to be specially framed, they despise it as the breath of the people, that will quickly be blown away. They make no more account of the power and authority of laws, than of cobwebs which ought not to be in the way of more important business. Counsels and precautions looking far into the future they despise as dreams and melancholy apprehensions. They scorn with gibes and jests men of real wisdom and experience, of great minds, and deep judgment. In short, they weaken all the foundations of civil government; a thing the more to be attended to, because the mischief is wrought, not openly, but by secret engines and intrigues; and the matter is not yet regarded by men with as much apprehension as it deserves.

PROVERB.

(13.) A prince who readily hearkens to lies, has all his servants wicked [22].

[19] Erasm. *Adag.* iii. 3. 26. This proverbial phrase Erasmus found in the *Phædrus* of Plato, and in Athenæus. [20] Eccles. x. 1. [21] Prov. xxix. 8. [22] Prov. xxix. 12.

Explanation.

When the prince is one who lends an easy and credulous ear without discernment to whisperers and informers, there breathes as it were from the king himself a pestilent air, which corrupts and infects all his servants. Some probe the fears and jealousies of the prince, and increase them with false tales; others excite in him passions of envy, especially against the most virtuous objects; others seek to wash away their own vileness and evil consciences by accusing others; others make way for the honours and wishes of their friends by traducing and calumniating their opponents; while others get up stage plots and a number of the like fables against their enemies. These are the machinations of servants who are of a more dishonest nature. But those also who are naturally of greater honesty and principle, when they find no safeguard in their innocence (the prince not being able to distinguish truth from falsehood), throw off their honesty, and catching the court breezes allow themselves to be carried where they blow. "For," as Tacitus says of Claudius, "there is no safety with that prince, who has nothing in his mind, but what others put into it [23]". And Comines well remarks, "It is better to be the servant of a prince whose suspicions have no end, than of one whose credulity has no measure [24]".

PROVERB.

(14.) A righteous man regardeth the life of his beast, but the tender mercies of the wicked are cruel [25].

Explanation.

There is implanted in man by nature a noble and excellent spirit of compassion, that extends itself even to the brutes which by the divine ordinance are subject to his command. This compassion therefore has a certain analogy with that of a prince towards his subject. Moreover it is most true, that the nobler a spirit is, the more objects of compassion it has. For narrow and degenerate spirits think that these things concern them not; but the spirit which forms a nobler portion of the universe has a feeling of communion with them. Whence we see that under the old law there were many commandments, not so much purely ceremonial as institutions of mercy; as was that of not eating the flesh with the blood thereof, and the like. The Essenes and Pythagoreans even abstained altogether from eating flesh: and the same superstition still prevails among some of the inhabitants of the Mogul Empire. Nay, the Turks, though by race and habits a cruel and bloody people, yet are wont to give alms to brute creatures, and cannot endure to see them ill used or tortured [26]. But lest these things which we have mentioned should seem to countenance every kind of mercy, Solomon wisely adds, "That the mercies of the wicked are cruel." Such is the sparing to use the sword of justice upon wicked and guilty men; which kind of mercy is more cruel than cruelty itself; for cruelty is only practised upon individual persons, but this mercy to crime by granting impunity arms and lets loose upon the innocent the whole army of villains.

PROVERB.

(15.) A fool utters all his mind, but a wise man reserves something for the future [27].

Explanation.

This proverb seems to be espceially aimed not at the levity of foolish men, who with equal readiness let out what should be uttered, and what should be concealed; not at that plain speaking, with which they inveigh without discrimination and judgment against everybody and everything; not at that talkativeness whereby they weary others *usque ad nauseam*; but at another fault which is less observed, namely, a method of discourse of all others most unwise and impolitic; I mean, when a man in private conversation so frames his discourse as to produce whatsoever he has to say pertinent to the matter in hand all at once and in a breath, without any stop or pause. Now this is a great impediment to business.

[23] Annal. xii. 3. [24] Histoire de Comines, i. 16. [25] Prov. xii. 10.
[26] See Busbequius, Ep. 3.—*J. S.* [27] Prov. xxix. 11.

For in the first place a speech that is broken and let fall part by part makes far more impression than a continuous one ; because in the latter the matters touched are not distinctly and severally apprehended and weighed ; and they have not time enough to settle ; but one reason drives out another before it has taken firm hold. Secondly, no one is endowed with such powerful and persuasive eloquence as with the first stroke of his discourse to make his listeners dumb and speechless, but the other party will always have some answer to make, and will perhaps raise objections ; and then it falls out, that the arguments which should have been reserved for refutation or reply, having been used and tasted beforehand, lose their strength and grace. Thirdly, if a man does not use all his arguments at once, but delivers them in parts, throwing in one after the other, he will detect by the countenance and answer of his opponent how each is taken, and what effect it produces, and he may thence take warning what to suppress and what to select in that which is to follow.

PROVERB.

(16.) If the spirit of the ruler rise up against thee, leave not thy place ; for management pacifies great offences [28].

Explanation.

This proverb directs a man how to behave when he has incurred the wrath and indignation of his prince, and contains two precepts ; first, that he resign not his place ; and secondly, that he carefully and prudently apply himself to the remedy, as he would in the case of a serious disease. For generally, when men perceive the anger of princes stirred against them, partly through impatience of disgrace, partly that they may not by their presence irritate the wound, and partly that their princes may see their sorrow and contrition, they withdraw from their offices and appointments, nay sometimes they resign their places and dignities into his hands. But Solomon censures this remedy as injurious, and with good reason. For in the first place it makes the disgrace too public, whereby enemies and enviers become the bolder to attack, and friends the more timid to assist. Secondly, it thus happens that the anger of the prince, which if it had not been divulged might have died away of its own accord, is more deeply rooted, and having as it were commenced by displacing the person proceeds to his overthrow. Lastly, this resignation savours somewhat of a malcontent spirit and one offended with the times which aggravates anger with suspicion. The precepts for the remedy are these ; first, let a man take care above all things neither by dullness on the one hand nor high spirit on the other to let it appear that he is insensible to the indignation of the prince, or not properly affected by it : that is, let him compose his countenance not to a sullen gloom but to a grave and modest sadness ; and in all his duties and actions let him exhibit less cheerfulness and pleasure. It will be also advantageous for him to engage the assistance and mediation of some friend with the prince, who should take occasion at fit times to insinuate how deeply the offender is grieved. Secondly, let him carefully avoid all, even the slightest occasions, which may lead to the reopening of the subject of offence, or draw upon him fresh indignation or open rebuke, for whatever cause, from the prince. Thirdly, let him diligently seek for every occasion of making his services acceptable to the prince, that he may both show an anxious wish to redeem his past fault, and that the prince may perceive of how good a servant he will be deprived if he loses him. Fourthly, let him either contrive to transfer the fault to others, or insinuate that it was committed with no bad intention, or even let him point out the malice of those who complained of him to the king or exaggerated the matter more than it deserved. Lastly, let him be watchful in everything, and intent on the remedy.

PROVERB.

(17.) He that is first in his own cause is just, then comes the other side, and searches him [29].

[28] Eccles. x. 4. [29] Prov. xviii. 17.

Explanation.

In every cause the first information, if it have dwelt for a little in the judge's mind, takes deep root, and colours and takes possession of it; insomuch that it will hardly be washed out, unless either some clear falsehood be detected in the matter of the information, or some deceit in the statement thereof. A bare and simple defence, though it be just and of greater weight, will hardly counterbalance the prejudice of the first information, or restore to an equilibrium the scales of justice which have once inclined. Wherefore as it is safest for the judge to know nothing of the merits of the case till both parties are heard together, so it is the best course for the defendant, if he finds the judge prejudiced, to apply himself, as far as the case allows, to detect some fraud or deceit employed by the opposite party to abuse the judge.

PROVERB.

(18.) He that delicately brings up his servant from a child, shall afterwards find him insolent [30].

Explanation.

According to the advice of Solomon, princes and masters ought to keep a measure in conferring grace and favour on their servants. In this three points are to be observed; first, that the promotion be by steps, and not by jumps; secondly, that they be accustomed to an occasional disappointment; and thirdly, as Machiavelli well advises, that they should have ever before their eyes some ulterior object of ambition [31]. Otherwise princes will be requited by their servants with disrespect and contumacy instead of duty and gratitude; for sudden promotion begets insolence; continual obtaining of desires begets impatience of refusal; and if there be nothing further to aspire to, there will be an absence of alacrity and industry.

PROVERB.

(19.) Seest thou a man swift of despatch? he shall stand before kings, and shall not be reckoned among the mean [32].

Explanation.

Of all the qualities which kings especially look to and require in the choice of their servants, that of despatch and energy in the transactions of business is the most acceptable. Men of deep wisdom are objects of jealousy to kings, as being too close observers, and being able to use their abilities as an engine to turn and wind their masters against their will and knowledge. Popular men are disliked as standing in the light of kings and drawing the eyes of the people upon themselves. Men of great spirit and courage are often accounted turbulent and overdaring. Men of honour and integrity are reputed unmanageable and not pliant enough to all their masters' commands. Lastly, there is no other virtue which does not present some shadow of offence to the minds of kings. Expedition in the execution of their commands is the only one which contains nothing that is not acceptable. Moreover the minds of kings are hasty and impatient of delay; for they imagine that they have power to do what they will; all they want is, that it be done quickly; whence of all things despatch is most pleasing to them.

PROVERB.

(20.) I considered all the living which walk under the sun, with the second child who shall rise in his stead [33].

Explanation.

This proverb remarks upon the vanity of men, who are wont to crowd around the appointed heirs of princes. The root hereof is in that madness, deeply im-

[30] Prov. xxix. 21. The English version has, "Shall have him become his son at the length."

[31] We find Machiavelli's opinion, as to what the conduct of princes towards their ministers ought to be, in the twenty-second chapter of *Il Principe*. It hardly appears to justify the reference here made to him; but I have not met with any passage in his writings which contains precisely the remark in the text.

[32] Prov. xxii. 29.

[33] Eccles. iv. 15, *Vulgate*. The English version differs considerably.

planted by nature in human minds, of being too fond of their own hopes. For there is scarcely any one but takes more delight in what he hopes for than in what he has. Novelty also is very pleasing to man, and is eagerly sought after. Now in a prince's heir hope and novelty are combined. And this proverb implies the same as that which was said of old, first by Pompey to Sylla, and afterwards by Tiberius respecting Macro. "That there be more who worship the rising than the setting sun [34]." And yet princes are not much disturbed at this, nor do they care much for it, as neither Sylla nor Tiberius did; but they rather scorn the fickleness of mankind, and do not care to strive with dreams; and hope, as was said, is but the dream of a waking man [35].

PROVERB.

(21.) There was a little city, and few men within it; and there came a great king against it, and built great bulwarks round against it, and besieged it. Now there was found in it a poor wise man, and he by his wisdom delivered the city, yet no man remembered that same poor man [36].

Explanation.

This proverb notes the corrupt and ungrateful nature of mankind, who in distress and adversity have commonly recourse to the wise and active men, whom they formerly held in contempt; but as soon as the storm has passed over, they are found ungrateful to their preservers. Machiavelli might well make it a question, "Which was more ungrateful to their benefactors, a prince or a people? [37]" but meanwhile he implies that both are guilty of ingratitude. But the ingratitude of the prince or the people is not the only cause of this; there is added the envy of nobles, who are secretly displeased with the issue though fortunate and prosperous, because it did not originate in themselves; whence they both depreciate the merit of the work, and depress the author.

PROVERB.

(22.) The way of the slothful is as an hedge of thorns [38].

Explanation.

This proverb very elegantly expresses the fact, that sloth is in the end laborious. Diligence and careful preparation remove the obstacles against which the foot would otherwise stumble, and smooth the path before it is entered; but he who is sluggish and defers everything to the last moment of execution, must needs walk every step as it were amidst briars and thorns, which catch and stop him. This likewise may be noted in the management of a family; wherein if care and forethought be used, everything goes on smoothly and of itself, without noise and discord; but if they be wanting, on any important emergency everything has to be done at once, the servants are in confusion, and the house in an uproar.

PROVERB.

(23.) To have respect of persons in judgment is not good; for, for a piece of bread will that man forsake the truth [39].

Explanation.

This proverb most wisely marks that in a judge facility of disposition is more pernicious than bribery; for it is not every one that offers a bribe, but there is scarcely a case wherein something may not be found to bias the mind of the judge, if he be a respecter of persons. One man will be respected because he is popular; another because he has a shrewd tongue; another because he is rich; another because he is agreeable; another because he is recommended by a friend. In fine, where respect of persons prevails, there will be unequal measures everywhere, and for the most trifling reason, as it were for a morsel of bread, judgment will be perverted.

[34] Tac. Ann. vi. 46., and Plut. in Pomp. c. 14.
[35] Cf. Quintil. vi. 2. 30.
[36] Eccl. ix. 14, 15.
[37] Machiavelli, *Discorsi*, i. 29.
[38] Prov. xv. 19.
[39] Prov. xxviii. 21.

PROVERB.

(24.) A poor man that oppresses the poor, is like a sweeping rain, which causes famine [40].

Explanation.

This proverb was anciently figured and represented under the fable of the full and hungry horseleech; for the oppression of a poor and hungry man is far more severe than that of a rich and full one, inasmuch as the former practises all the arts of exactions, and searches every corner for money. The same used also to be likened to a sponge, which when dry sucks in strongly, but not so when wet. And it contains a useful warning for princes and peoples; for princes, that they commit not offices or the government of provinces to needy persons and such as are in debt; for peoples, that they allow not their rulers to be too much in want of money.

PROVERB.

(25.) A righteous man falling down before the wicked is as a troubled fountain and a corrupt spring [41].

Explanation.

This proverb teaches that an unjust and scandalous judgment in any conspicuous and weighty cause is above all things to be avoided in a state; especially where it involves, not the acquittal of the guilty, but the condemnation of the innocent. For particular injuries passing unpunished do indeed trouble and pollute the waters of justice, but it is only in the streamlets; whereas unjust judgments, such as we spoke of, infect and corrupt the very fountain-heads. For when the judgment seat takes the part of injustice, there succeeds a state of general robbery, and men turn wolves to each other, according to the adage [42].

PROVERB.

(26.) Make no friendship with an angry man, and walk not with a furious man [43].

Explanation.

The more religiously the laws of friendship are to be observed and honoured among good men, the more care should be taken to make a prudent selection of friends at the first. Now the disposition and manners of our friends, so far as they affect ourselves only, should by all means be borne with; but when they compel us to alter our bearing and deportment towards other men, the condition of the friendship becomes very hard and unfair. Wherefore, as Solomon advises, it is of the first importance for the peace and security of life to have no dealings with passionate men, or such as easily engage in disputes and quarrels; for they will perpetually involve us in strife and faction, so that we shall be compelled either to break off our friendship, or disregard our own safety.

PROVERB.

(27.) He that covers a transgression seeks friendship, but he that repeats a matter separates very friends [44].

Explanation.

There are two ways of making peace and reconciling differences; the one begins with an amnesty, the other with a recital of injuries, combined with apologies and excuses. Now, I remember that it was the opinion of a very wise man and a great politician, that "he who negotiates a peace, without recapitulating the grounds of difference, rather deludes the minds of the parties by representing the sweetness of concord, than reconciles them by equitable adjustment". But Solomon, a wiser man than he, is of a contrary opinion, approving of amnesty and forbidding recapitulation of the past. For in it are these disadvantages; it is as the chafing of a sore; it creates the risk of a new quarrel, (for the parties will never agree as to the proportions of injuries on either side);

[40] Prov. xxviii. 3. [41] Prov. xxv. 26. [42] Erasm. *Adag.* i. 1. 70.
[43] Prov. xxii. 24. [44] Prov. xvii. 9.

and lastly, it brings it to a matter of apologies; whereas either party would rather be thought to have forgiven an injury than to have accepted an excuse.

PROVERB.

(28.) In every good work there is abundance; but where there are many words there is commonly penury [45].

Explanation.

Herein Solomon makes a distinction between the fruit of the labour of the hand and that of the tongue; from the one proceeds abundance, from the other penury. For it generally happens that they who talk much, boast much, and make many promises, are needy persons, who make no profit of the things whereof they discourse. For the most part also they are no ways industrious and active in point of work, but merely feed and fill themselves with words, as with wind. Surely, as the poet says, "He that is silent is sure [46]"; —he who knows that he is succeeding in what he is about, is satisfied and holds his tongue; whereas he who feels that he has got hold of nothing but wind, betakes himself to talking and boasting.

PROVERB.

(29.) Open rebuke is better than secret love [47].

Explanation.

This proverb rebukes the mistaken kindness of friends, who do not use the privilege of friendship freely and boldly to admonish their friends, as well of their errors as their dangers. "What can I do," says a man of this character, "or what steps can I take? I love him as much as any one, and if any misfortune were to befall him I would gladly substitute myself in his place; but I know his disposition well; if I deal freely with him I shall offend him, or at all events put him out of humour, and do no good by it; and I should sooner estrange him from his friendship for me, than from those things which he has fixed his heart upon." Now a friend of this sort Solomon reprehends as weak and useless, affirming that more advantage may be gained from an open enemy than from such a man; for a man may chance to hear by way of reproach from an enemy, what the friend is too good-natured to utter.

PROVERB.

(30.) A wise man looketh well to his ways, but a fool turneth to deceit [48].

Explanation.

There are two kinds of wisdom; the one true and sound, the other degenerate and false, which Solomon does not hesitate to term folly. He who applies himself to the former takes heed of his own ways, foreseeing dangers, preparing remedies, employing the assistance of the good, guarding himself against the wicked, cautious in entering upon a work, not unprepared for a retreat, watchful to seize opportunities, strenuous to remove impediments, and attending to many other things which concern the government of his own actions and proceedings. But the other kind is entirely made up of deceits and cunning tricks, laying all its hopes in the circumventing of others, and moulding them to its pleasure; which kind the proverb denounces as being not only dishonest, but also foolish. For in the first place, it is not among the things which are in our own power, nor does it even depend on any certain rule; but fresh stratagems are daily to be contrived, as the old ones are used up and worn out. Secondly, a man who has once earned a character for deceit and trickery, entirely loses one of the principal instruments of business, which is credit; whence he will find everything turn out otherwise than he expects. Lastly, these very arts, however fair and specious they may appear, generally fail: as Tacitus has well remarked, "Bold and crafty counsels are fair in promise, hard in execution, and unfortunate in issue [49]".

[45] Prov. xiv. 23. [46] Ovid. *Rem. Amor.* 697. [47] Prov. xxvii. 5.
[48] Prov. xiv. 8. 15. [49] The words occur in Livy, xxxv. 32, and not in Tacitus.

PROVERB.

(31.) Be not righteous overmuch, neither make thyself over wise; why shouldest thou destroy thyself before thy time [50].

Explanation.

"There are seasons," says Tacitus [51], "wherein great virtues are the surest causes of ruin." And upon men eminent for virtue and justice it comes sometimes suddenly, sometimes long foreseen. But if they have also the gift of wisdom, that is, if they are cautious and watchful for their own safety, they gain this advantage; that their ruin comes upon them all at once and entirely through dark and secret plots, whereby envy is avoided, and destruction assails them unawares. But with regard to that *overmuch* which the proverb speaks of (as these are not the words of a Periander, but of Solomon, who, though he often takes notice of what is bad in human life, never enjoins it), we must not understand it of virtue itself (in which there can be no overmuch), but of the vain and invidious affectation and show thereof. Something of the same kind is suggested by Tacitus in speaking of Lepidus; placing it in the light of a miracle that he never uttered a servile opinion, and yet lived safely in such dangerous times: "The thought occurs to me," says he, "whether these things are controlled by fate, or whether it is in our power to steer an intermediate course between slavish obedience and abrupt contumacy, free alike from danger and from indignity [52]"

PROVERB.

(32.) Give opportunity to a wise man, and he will increase his wisdom [53].

Explanation.

Here distinction is made, between the wisdom which is grown and ripened into a true habit, and that which floats only in the conceit of the brain, or is boasted in talk and has no deep root. The former, upon occasion presented for its exercise, is instantly excited, made alert, and enlarged, so that it appears greater than it was; but the latter, which before the occasion was eager and active, when the emergency occurs, becomes amazed and confused; so that even he who considered himself possessed of it, begins to doubt whether the notions he had formed of it were not mere dreams and idle speculations.

PROVERB.

(33.) He who praises his friend with a loud voice, rising early in the morning, it shall be counted a curse to him [54].

Explanation.

Praises, when moderate and seasonable, and expressed on fit occasion, contribute greatly both to the reputation and fortune of men; but when immoderate, noisy, and unseasonably lavished, they do no good; nay rather (if we believe the Proverb), they do great harm. For in the first place they openly betray themselves as either springing from excessive partiality, or got up and affected for the purpose of gratifying the object of them by false encomiums, rather than of honouring him with his just attributes. Secondly, sparing and moderate praises generally invite the audience to add something to them; whereas lavish and immoderate praises provoke them to take off and detract. Thirdly (which is the principal point), he that is over-praised becomes an object of envy; for all excessive praises seem to point to the reproach of others who are no less deserving.

PROVERB.

(34.) As the face is reflected in the water, so is the heart of man manifest to the wise [55].

Explanation.

Here is distinguished between the mind of a wise man, and that of others; the former being compared to water or a glass which represents the forms and

[50] Eccles. vii. 16.
[51] Tac. Hist. i. 2.
[52] Tac. Ann. iv. 20.
[53] Prov. ix. 9.
[54] Prov. xxvii. 14.
[55] Prov. xxvii. 19.

images of things ; the other to the earth, or an unpolished stone, which gives no reflection. And this comparison of the mind of a wise man to a glass is the more proper ; because in a glass he can see his own image together with the images of others, which the eye itself without a glass cannot do. But if the mind of a wise man is sufficiently large to observe and distinguish an infinite variety of dispositions and characters, it only remains to take care that the application be as various as the representation. "A wise man will know how to adapt himself to all sorts of characters [56]."

Thus have I stayed perhaps somewhat longer on these Proverbs of Solomon than is agreeable to the proportion of an example, being led on by the dignity of the subject, and the renown of the author. Neither was this in use only with the Hebrews, but it is generally to be found in the wisdom of the ancients, that as men found out any observation which they thought good for life, they would gather it and express it in some short proverb, parable, or fable. Fables, as has been said elsewhere, were formerly substitutes and supplements of examples, but now that the times abound with history, the aim is more true and active when the mark is alive. And therefore the form of writing, which of all others is fittest for such variable argument as that of negotiation and scattered occasions, is that which Machiavelli most wisely and aptly chose for government ; namely, Observations or Discourses upon Histories and Examples. For knowledge drawn freshly and in our view out of particulars knows best the way back to particulars again ; and it contributes much more to practice, when the discourse or discussion attends on the example, than when the example attends upon the discourse. And this is not only a point of order, but of substance also. For when the example is laid down as the ground of the discourse, it is set down with all the attendant circumstances, which may sometimes correct the discourse thereupon made, and sometimes supply it, as a very pattern for imitation and practice ; whereas examples alleged for the sake of the discourse are cited succinctly and without particularity, and like slaves only wait upon the demands of the discourse.

But it is worth while to observe this difference ; that as Histories of Times are the best ground for such discourse upon governments as Machiavelli handles ; so Histories of Lives are the most proper for discourse on business, because they include all kinds of occasions and transactions, both great and small. Nay, we may find a ground for discourse on business fitter than them both, which is discourse upon such Letters as are wise and weighty, like those of Cicero to Atticus, and others ; for letters have a closer and more lively representation of business, than either annals or lives. Thus have we spoken both of the matter and form of this first part of the knowledge of negotiation touching scattered occasions, which we note to be deficient.

But yet there is another part of this knowledge, which differs as much from that whereof we have spoken, as general wisdom differs from wisdom for oneself ; the one moving as it were from the centre to the circumference, the other from the circumference to the centre. For there is a wisdom of imparting counsel to others, and there is a wisdom of foresight for one's own fortunes ; and these sometimes meet, but oftener sever. For many are wise in their own ways, who yet are weak for government or counsel, like ants, which are wise creatures for themselves, but very hurtful for the garden. This wisdom for oneself the Romans, though excellent guardians of their country, took much knowledge of ; "For," says the comic poet, "a wise man fashions his fortune for himself [57]". And it grew into an adage amongst them, "Every man is the maker of his own fortune". And Livy attributes it to the elder Cato, "Such was his vigour of mind and understanding, that wherever he had been born he would have made his fortune [58]".

This kind of wisdom, if it be too much declared and professed, has always been regarded as not only impolitic, but unlucky and ill-omened ; as was observed in Timotheus the Athenian, who having done many great services to the

[56] Ovid, *De Arte Amat.* i. 760 :—Qui sapit innumeris moribus aptus erit.
[57] Plaut. *Trinummus*, ii. 2. 84. [58] Livy, xxxix. 40.

state in his government, and giving the customary account thereof to the people, concluded every particular with this clause, "And in this fortune had no part [59]". But it happened that he never prospered in anything he took in hand afterwards; for this is too high and too arrogant, savouring of that which Ezekiel says of Pharaoh, "Thou sayest, my river is mine own, and I have made it for myself [60]"; or of that which Habakkuk says, "They exult and offer sacrifices to their net [61]"; or of that which the poet expresses of Mezentius the despiser of the gods:—

> Dextra mihi Deus, et telum quod missile libro
> Nunc adsint [62].

Lastly, Julius Cæsar never, as far as I recollect, betrayed the weakness of his secret thoughts, except in a similar kind of speech. For when the augur brought him word that the entrails were not favourable, he murmured in a low voice, "They will be more favourable when I choose [63]"; which speech did not long precede the misfortune of his death. For this excess of confidence was ever as unlucky as unhallowed; and therefore great and truly wise men have thought it right to ascribe their successes to their fortune, and not to their skill or energy. Thus Sylla surnamed himself "the Fortunate [64]", not "the great"; and Cæsar (better in this instance than the last) said to the master of the ship, "You carry Cæsar and his fortune [65]".

Nevertheless, proverbs such as these, "Every man is the architect of his own fortune"; "A wise man shall rule over the stars;" "No path is impervious to virtue [66];" and the like; if taken and used as spurs to industry, and not as stirrups to insolence, rather to beget in men resolution and strength of judgment than arrogance or outward declaration, have ever been rightly held round and good, and are doubtless imprinted in the greatest minds, so as sometimes they can scarce contain such opinions within; as we see in Augustus Cæsar, (who, compared with his uncle, was rather unlike than inferior, though decidedly a man of more moderation), how on his death-bed he desired his friends around him to give him a "Plaudite" when he expired, as if he were conscious to himself that he had well played his part in life [67]. This part of knowledge I report also as deficient; not but that it is used and practised even more than is fit, but it has not been handled in books. And therefore according to my custom, I will as before set down some heads or passages of it, and call it the *Architect of Fortune, or the Knowledge of Advancement in Life.*

Wherein at first sight I shall appear to handle a new and unwonted argument, in teaching men how to raise and make their fortune; a doctrine indeed, wherein every man perchance will be ready to yield himself a disciple, till he has experience of the difficulty thereof. For the things necessary for the acquisition of fortune are neither fewer or less difficult nor lighter than those to obtain virtue; and it is as hard and severe a thing to be a true politician, as to be truly moral. But the handling hereof concerns learning greatly, both in honour and substance; in honour principally, that pragmatical men may not imagine that learning is like a lark, which can mount and sing and please itself and nothing else; but may know that it rather partakes of the nature of a hawk, which can soar aloft, and can also descend and strike upon its prey at pleasure. Again, it tends to the perfection of learning, because it is the perfect law of the inquiry of truth, "that nothing be in the globe of matter which has not its parallel in the globe of crystal or the understanding"; that is, that there be nothing in practice, whereof there is no theory and doctrine. Not however that learning admires or esteems this architecture of fortune otherwise than as an inferior work. For no man's fortune can be an end worthy of the gift of being that

[59] Plut. in Sylla, c. 6. [60] Ezek. xxix. 3. [61] Habak. i. 16.

[62] Virg. *Æn.* x. 773 [Cf. vii. 648; x. 880]:—
> My own right hand and sword assist my stroke,
> These gods alone Mezentius will invoke.

[63] Sueton, in Julio, c. 77. [64] Plut. in Sylla, c. 6. [65] Plut. *de Roman. Fort.* p. 319.

[66] Ovid, *Met.* xiv. 113. [67] Sueton. in Aug. c. 99.

has been given him by God ; and often the worthiest men abandon their fortunes willingly, that they may have leisure for higher pursuits. But nevertheless, fortune as an instrument of virtue and merit deserves its own speculation and doctrine.

To this doctrine are attached certain precepts, some summary, and some scattered or various ; whereof the former relate to the just knowledge of ourselves and others. Let the first precept then (on which the knowledge of others turns) be set down as this : that we obtain (as far as we can) that window which Momus required [68] ; who seeing in the frame of man's heart such angles and recesses found fault that there was not a window to look into its mysterious and tortuous windings. This window we shall obtain by carefully procuring good information of the particular persons with whom we have to deal ; their natures, their desires and ends, their customs and fashions, their helps and advantages, with their principal means of support and influence ; so again their weaknesses and disadvantages, where they lie most open and obnoxious ; their friends, factions, patrons and clients ; their enemies, enviers, and competitors ; their moods and times ;

(Sola viri molles aditus et tempora noris) [69] :

lastly, their principles, fashions, prescribed rules, and the like ; and this not only of particular persons, but also of the particular actions which are on foot from time to time, and as it were under the anvil ; how they are directed and succeed, by whom promoted or opposed, what is their weight and importance, what consequences they involve, and the like. For the knowledge of present actions is not only material in itself, but without it also the knowledge of persons will be very treacherous and erroneous ; for men change with actions, and whilst they are involved and engaged in them they are one, and when they return to their nature they are another. These informations of particulars touching persons and actions, are as the minor propositions in every active syllogism ; for no truth or excellence of observations or axioms (whence the major political propositions are drawn) can suffice to ground a conclusion, if there be error in the minor proposition. For the possibility of this knowledge Solomon is our surety ; who says, " Counsel in the heart of man is like deep water, but a man of understanding will draw it out [70] ". And although the knowledge itself falls not under precept, because it is of individuals, yet the instructions for obtaining it may be laid down with advantage.

Knowledge of men may be derived and obtained in six ways ; by their countenances and expressions, their words, their actions, their dispositions, their ends, and lastly, by the reports of others. With regard to the countenance, be not influenced by the old adage, " Trust not to a man's face [71] " ; for though this may not be wrongly said of the general outward carriage of the face and action, yet there are some more subtle motions and labours of the eyes, mouth, countenance, and gesture, by which (as Q. Cicero elegantly expresses it), the " door of the mind [72] " is unlocked and opened. Who more close than Tiberius Cæsar ? Yet Tacitus, in noting the different character and manner of speaking which he employed in commending the exploits of Germanicus and Drusus to the Senate, says, that his praises of Germanicus were set forth " in words which appeared rather studied for outward effect, than as if he really felt them " ; but of his praises of Drusus, he says, " that he said less, but spoke more earnestly and

[68] See Lucian in Hermotim. 20. But as Bacon, in the Essay on Building, alludes to a part of the story which Lucian does not tell, it is probable that his knowledge of it was derived from some other source. The most obvious one is the Æsopic fable ; but there Momus's wish is not quite the same as in the text. In the fable he complains not that there are no shutters, διυρίδες, in the breast, but that αἱ φρένες are inside it, and not on the surface.

[69] Virg. *Æn.* iv. 423 :—

His times of access you alone can find,
And know the soft approaches to his mind.

[70] Prov. xx. 5. [71] Juv. ii. 8. :—Fronti nulla fides. [72] De Pet. Cons. § 11.

sincerely [73]". Again, Tacitus in speaking of this same Tiberius, and remarking on some speech, as being somewhat less ambiguous, says, "At other times he appeared to have a difficulty with his words, but he spoke more freely when he took anybody's part [74]"; so that it is hard to find any man so skilled and perfect in the art of dissimulation, or any countenance so controlled or commanded (as he calls it) as to sever from a feigned and dissembling tale all these marks, and prevent the style from being either more careless, or more adorned, or more tedious and wandering, or more dry and hard, than usual.

As for words, though they be (as physicians say of waters) full of trickery and deceit, yet they are excellently detected in two ways; namely, either when they are spoken on the sudden, or in passion. Thus we see Tiberius, being suddenly incensed at some stinging words of Agrippina, and thrown a little off his guard, advanced a step out of his natural dissimulation. "These words (says Tacitus) drew from him a voice seldom heard from that dark bosom, and taking her up sharply, he reminded her in a Greek verse that she was thus offended, because she did not reign [75]". And therefore the poet elegantly calls passions "tortures", which urge men to confess their secrets:

Vino tortus et irâ [76].

And experience shows that there are very few men so true to their own secrets, and so settled in their purpose, but that sometimes through anger, sometimes through bravado, sometimes through affection for their friends, sometimes through a weakness of mind unable any longer to bear the burden of its thoughts, and sometimes through some other affection, they open and communicate their secret thoughts and feelings; especially if they be put to it with a counter-dissimulation, according to the Spanish proverb, "Tell a lie, and find a truth".

Neither should deeds, though the most assured pledges which the human mind can give, be entirely trusted, without a judicious and careful consideration of their magnitude and nature. For the saying is most true, "that fraud begins by winning credit in small things, that it may deceive with greater advantage [77]"; and the Italian thinks himself upon the point of being bought and sold, if he is better used than he was wont to be, without manifest cause [78]. For small favours do but quiet and lull to sleep men's caution and industry, whence they are rightly called by Demosthenes, "sops to feed sloth [79]". Again, the treacherous and ambiguous character of some deeds, even such as are taken for favours, may be seen from that deception which Mucianus practised on Antonius Primus; when after the hollow and unfaithful reconciliation which was made between them, he advanced many of the friends of Antonius to great offices: "At the same time he bestows on his friends tribuneships and governments [80]"; wherein under pretence of strengthening Antonius, he entirely disarmed and isolated him by winning his friends.

But the surest key to unlock the minds of men is by searching and thoroughly understanding either their natures and characters, or their intentions and ends; wherein the weaker and more simple sort are best interpreted by their natures, but the wiser and more reserved by their ends. For it was both pleasantly and wisely said, though I think very untruly, by a nuncio of the Pope, on his return from an embassy to a certain nation, where he had served as legate; who, when

[73] Tacit. *Ann.* i. 52. In the *Advancement of Learning*, this passage stands thus:—"None more close than Tiberius, and yet Tacitus saith of Gallus, *Etenim vultu offensionem conjectaverat.* So again, noting," etc. The passage referred to is in *Annals*, i. 12, and was probably omitted by an oversight, for it is quite in point.—*J. S.*

[74] Tac. *Ann.* iv. 31. [75] Ib. iv. 52.

[76] Hor. *Ep.* i. 18. 38:—

Tortured with wine and wrath.

[77] Livy, xxviii. 42.

[78] Bacon alludes to the Italian proverb:—

Chi mi fa più caresse chè non suole
O m'a ingannato, o ingannar mi vuole.

[79] Cf. Dem. *Olynth.* iii. 33, and 1 *Philipp.* towards the end. [80] Tac. *Hist.* iv. 39.

his opinion was asked touching the appointment of his successor, gave as his advice, "in no case to send one who was remarkably wise, but one rather of moderate abilities; because (said he) no very wise man would ever imagine what they in that country were likely to do". And certainly it is a very frequent error, especially among wise men, to measure others by the standard of their own genius, and to shoot over the mark, by supposing that men have deeper ends in view, and more subtle schemes than ever entered into their minds; as is elegantly expressed by the Italian proverb, which remarks, "There is always less money, less wisdom, and less faith, than men imagine[81]". Wherefore in men of a meaner capacity, because they do many foolish things, we must form our opinion rather from the propensities of their natures, than from their designs and ends.

Princes also (though for a very different reason) are best interpreted by their natures, but private persons by their ends. For princes, being at the summit of human desires, have for the most part no particular ends whereto they earnestly and constantly aspire, by their position and distance from which a measure and scale of the rest of their actions might be taken; and this is one of the principal causes why their hearts are (as the Scriptures declare) inscrutable[82]. But every private person is like a traveller striving earnestly to arrive at the end of his journey where he may rest; whereby it is not difficult to conjecture what he will do, and what he will not do. For if it be a means to his end he will probably do it; but if opposed to his end, he will probably not do it. Nor is it enough to inform ourselves only of the variety of men's natures and ends simply; but we should also examine them comparatively, and find what it is that predominates and directs the rest. Thus, we see, when Tigellinus saw himself outstripped by Petronius Turpilianus in providing pleasures and catering to Nero's humours, "he wrought" (says Tacitus) "on Nero's fears[83]", whereby he displaced his rival.

As for the knowing of men at second hand from the reports of others, a few words will suffice. Men's weaknesses and faults are best known from their enemies, their virtues and abilities from their friends, their customs and times from their servants, their opinions and thoughts from their familiar friends, with whom they discourse most. General fame is light, and the judgments of superiors are not much to be trusted; for to them men are more masked. "The truest character comes from a man's own household[84]."

But to all this inquiry the most compendious way rests in three things; the first is to have a general acquaintance with those who have a varied and extensive knowledge both of persons and things; but especially to endeavour to have at least some particular friends who, according to the diversity of business and the diversity of persons, can give perfect and solid intelligence in every several kind. The second is to keep a discreet temper and mediocrity both in liberty of speech and in secrecy; in most cases using liberty, but secrecy when the occasion requires it. For liberty of speech invites and provokes a similar liberty in others, and so brings much to a man's knowledge; but secrecy induces trust, so that men like to deposit their secrets there, as in their own bosom. The last is the gradual reducing of a man's self to such a watchful and ready habit of mind, that in every conference and action he may both carry on the matter in hand, and also observe other incidents. For as Epictetus lays down that a philosopher in every particular action should say to himself, "I both wish to do this, and also to keep to my rule[85]": so a political man in everything should inwardly resolve, "I will both do this, and learn something more for future use." Wherefore those who are so intent and absorbed in the matter which they have in hand, that they have not even a thought to spare for anything that may turn up by the way (which Montaigne confesses to have been his weakness[86]), are indeed the best servants of kings and commonwealths, but fail in advancing their own fortunes. Meanwhile special care should be taken to restrain too great an

[81] Quoted also in the *Advancement of Learning*.
[82] Pro. xxv. 3.
[83] Tac. Ann. xiv. 57.
[84] Q. Cicero, De Pet. Cons. 5.
[85] Epict. *Enchir.* c. 9.
[86] Cf. Essay *De l'Utilité et de l'Honnêteté*.

energy and zeal of mind, lest by much knowledge we be drawn on to much meddling, than which nothing is more unfortunate and rash. So that this variety of knowledge of persons and things, which I recommend to be gained, returns in the end only to this, that we make a more judicious choice of the actions we undertake, and of the persons whose assistance we use; whereby we may manage and conduct everything with more safety and dexterity.

Next to the knowledge of others comes the knowledge of self. And here we must use even greater care in gaining good and accurate information touching ourselves, than touching others; since the oracle "know thyself" is not only a rule of universal wisdom, but has a special place in politics. For St. James says well, "That he who looks at his face in a glass, yet suddenly forgets what manner of man he was[87]"; so that there is need of very frequent inspection. And this holds good likewise in politics, though the glasses are different; for the divine glass in which we ought to behold ourselves is the Word of God, but the political glass is nothing else than the state of the world or times wherein we live.

Men ought therefore to take an accurate and impartial survey of their own abilities, virtues, and helps; and again, of their wants, inabilities, and impediments; making the account in such a manner that the former are always estimated rather more, and the latter rather less than they really are. From this examination they should frame the following considerations.

First, to consider how their natural and moral constitution sort with the general state of the times; which if they find agreeable and consonant, then in all things to give themselves more scope and liberty, and indulge their dispositions; but if there be anything differing and discordant, then in the whole course of their life to be more close, retired, and reserved. And this we see in Tiberius, who being conscious that his tastes did not well suit with the age, never attended the public games, and during the twelve last years of his life never even went into the Senate; whereas Augustus lived ever in men's eyes, which Tacitus observes: "Tiberius's habits (says he) were different[88]". Pericles also acted on the same principle.

Secondly, to consider how their nature sorts with the professions and courses of life which are in use and repute, and whereof they have to make election; so that if their profession is not already determined, they may make choice of that which is most fit and agreeable to their disposition; but if they have already entered on a path of life for which they are not naturally suited, that they may leave it the first opportunity, and adopt a fresh profession. And this we see was done by Valentine Borgia[89], who was brought up by his father to the priesthood, but afterwards quitted it in obedience to his own inclination, and betook himself to a military life; although equally unworthy of the office of prince and priest, seeing that he dishonoured both.

Thirdly, to consider how they sort with their equals and rivals, whom they are like to have as competitors in their fortune; and to take that course of life wherein there is the greatest scarcity of distinguished men, and they themselves are likely to be most eminent. As Julius Cæsar did, who at first was an orator and pleader, and devoted himself entirely to a civil life; but when he saw how Cicero, Hortensius, and Catulus excelled in eloquence, and that there was no man of any great reputation in military matters but Pompey, he forsook the course he had begun, and bidding a long farewell to a civil greatness, transferred his designs to the arts of a soldier and a general; whereby he mounted to the highest power of the state[90].

Fourthly, to consider their own nature and disposition in the choice of their friends and dependences. For different natures require different kinds of friends: to some is suited such as are solemn and silent; to others such as are bold and arrogant, and so on. And it is worthy of mark what kind of men the friends of Julius Cæsar were (namely, Antony, Hirtius, Pansa, Oppius, Balbus, Dola-

[87] St. James, i. 23, 24.

[88] Tacit. *Ann.* i. 54.

[89] Better known as Cæsar Borgia, son of Pope Alexander the Sixth. After his change of profession, for an account of which see Guicciardini, vi. 3, he was made Duke of the Valentinois, and is therefore spoken of by Italian writers as "il duca Valentino". Bacon has here used this title as a prænomen.

[90] See Plutarch, *Cæsar*, c. 3.

bella, Pollio, and the rest), who used to swear, " that they were ready to die, so Cæsar might live [91] ", displaying an infinite affection for Cæsar, but arrogance and contempt towards every one else ; men active in the execution of business, but of no great character or reputation.

Fifthly, to take especial heed how they guide themselves by examples, and not vainly to endeavour to frame themselves upon other men's models ; as if what is open to others must needs be open to them, not at all reflecting how far the nature and character of their models may differ from their own. And it was this error into which Pompey evidently fell, who, as Cicero has recorded, was so often wont to say, " Sylla could do this, why should not I [92] ? " Wherein he was much deceived, the nature and proceedings of himself and Sylla being as far removed as the heaven from the earth ; the one being fierce, violent, and in everything pressing on to the end ; the other solemn, respectful of the laws, and regulating everything with a view to his dignity and character, which made him far less strong and effectual in accomplishing his designs. There are likewise other precepts of this nature, but these will be enough for an example of the rest.

But it is not enough for a man only to know himself ; for he should consider also of the best way to set himself forth to advantage ; to disclose and reveal himself ; and lastly, to turn and shape himself according to occasion. Now for the first we see nothing more usual than for the worse man to make the better external show. It is therefore no unimportant attribute of prudence in a man to be able to set forth to advantage before others, with grace and skill, his virtues, fortunes, and merits (which may be done without arrogance or breeding disgust) ; and again, to cover artificially his weaknesses, defects, misfortunes, and disgraces; dwelling upon the former and turning them to the light, sliding from the latter or explaining them away by apt interpretations, and the like. Tacitus says of Mucianus, the wisest and most active politician of his time, " That he had a certain art of setting forth to advantage every thing he said or did [93] ". And it requires indeed some art, lest it become wearisome and contemptible ; but yet it is true that ostentation, though carried to the first degree of vanity, is rather a vice in morals than in policy. For as it is said of calumny " calumniate boldly, for some of it will stick," so it may be said of ostentation (except it be in a ridiculous degree of deformity), " boldly sound your own praises, and some of them will stick ". It will stick with the more ignorant and the populace, though men of wisdom may smile at it ; and the reputation won with many will amply countervail the disdain of a few. But if this self-display whereof I am speaking be carried with decency and judgment, as with a natural, candid, and ingenuous bearing ; or if it be employed in times of danger, as by military persons in the time of war, or at times when others are most envied ; or if what a man says in his own praises appears to drop carelessly and unintentionally, without being dwelt upon too long or too seriously ; or if a man at the same time that he praises does not refrain from ridiculing and finding fault with himself ; or if he do it not spontaneously, but appears provoked and challenged to it by the reproaches and insolence of others, it adds greatly to his reputation. And surely no small number of those who are of a solid nature, and who from the want of this ventosity cannot spread all sail in pursuit of their own honour, suffer some prejudice and lose dignity by their moderation.

But for this enhancement of virtue, though some persons of weaker judgment and perhaps too scrupulous morality may disapprove of it, yet no one will deny that we ought at least to take care that virtue be not undervalued and unduly debased through neglect. This depreciation in the price of virtue may be effected in three ways : first, by a man offering and obtruding himself and his services in any business when he is unasked and uncalled for ; wherein men think he is rewarded, if he be not rejected. Secondly, by doing too much at the commencement of an action, and by performing all at once what ought to be done by degrees ; which in matters well managed procures a premature favour at first, but in the end induces satiety. Thirdly, by feeling too soon and easily the fruit of

[91] The phrase in Balbus's letter to Cicero *Ep. ad Att.* ix. 8.
[92] Cic. *Ep. ad Att.* ix. 10. [93] Tac. *Hist.* ii. 80.

virtue in commendation, applause, honour, and favour, and being content therewith; on which there is a prudent warning, "Take care lest you appear unaccustomed to great things if you are thus delighted by a small thing, as if it were great [94]".

But a diligent covering of defects is of no less importance than a prudent and skilful display of virtues. Defects may be principally concealed in three ways, and as it were under three coverts; namely, caution, colour, and confidence. Caution is, when men discreetly avoid those things to which they are not equal; whereas contrariwise bold and unquiet spirits thrust themselves without reflection into matters of which they have no experience, and so publish and proclaim all their defects. Colour is, when men warily and skilfully make and prepare a way for themselves, for a favourable and convenient construction of their faults or wants; as proceeding from a better cause, or intended for some other purpose, than is commonly imagined. For as to the concealment of vice, it is well said by the poet, that "vice often hides itself in the neighbourhood of virtue [95]". And therefore, whatsoever want a man has, he must take care to borrow the mask and colour of the neighbouring virtue that shadows it; as if he be dull, he must affect gravity; if a coward, mildness; and so on. It will be of advantage also for a man to frame and spread abroad some probable reason why he shrunk from doing his best, that the want of power may be imputed to want of will. As to confidence, it is indeed an impudent, but yet the surest and most effectual remedy; namely, for a man to profess to depreciate and despise whatsoever he cannot obtain; after the principle of prudent merchants, whose business and custom it is to raise the price of their own commodities, and to beat down the price of others. But there is a confidence which surpasses this other in impudence; and this is, for a man to brazen out his own defects, by putting them forward and displaying them to view; as if he believed himself especially eminent in those things wherein he is deficient. And the more easily to impose on others, he should appear to have least opinion of himself in those things wherein he is really the best: just as we see it is the practice of poets, who when they recite their verses, and you except to any, will immediately say "that that line cost them more labour than any of the rest"; and presently they will bring forward some other verse, which they know well enough to be the best in the number and the least open to objection, and seeming to suspect it themselves they will ask your opinion of it. But above all, if a man means to make a good figure and maintain his just position in the world, I consider it of the greatest importance to him, not to show himself disarmed and exposed to scorn and injury by too much goodness and sweetness of nature; but rather in everything to exhibit from time to time some sparks of a free and noble spirit and one that carries with it no less of the sting than of the honey. This kind of fortified carriage, with a spirit ready and prepared to defend itself against insults, is sometimes accidentally forced upon men by something inherent in their person or fortune; as in the case of persons deformed, illegitimate, or disgraced. Whence men of this nature, if ability be not wanting, commonly turn out fortunate.

With regard to the disclosing of a man's self, it is a very different thing from the self-display of which I have been speaking. For it relates not to a man's virtues or faults, but to his particular actions in life; wherein there is nothing more politic for a man than to preserve a sound and wise mediocrity in declaring or concealing his meaning in particular actions. For although depth of secrecy and concealment of designs, and that manner of action which effects everything by dark arts and methods (or *menées sourdes* as the French call them), be both useful and admirable; yet frequently, as is said, dissimulation breeds errors which ensnare the dissembler himself. Whence we see that the greatest and most noted politicians have not hesitated to declare freely and undisguisedly the objects which they had in view. So Lucius Sylla made open profession "that he wished all men happy or unhappy, as they stood his friends or enemies". So Cæsar, when he first went into Gaul, did not scruple to profess, "that he had

[94] Rhetor. ad Heren. iv. 4.

[95] Ovid, *Art. Amat.* ii. 662: Sæpe latet vitium proximitate boni.

rather be first in a village than second in Rome [96]". And again, as soon as he had begun the war, he by no means played the part of a dissembler, if we may judge by what Cicero says of him, "The other (meaning Cæsar) does not refuse, but rather demands to be called a tyrant, as he really is [97]". So we see in a letter of Cicero to Atticus, how little of a dissembler Augustus Cæsar was; for on his very entrance into public life, when he was still the darling of the senate, yet in his harangues to the people he would use this form of oath; "As I hope to attain to the honours of my parent [98]"; which was nothing less than the tyranny. It is true indeed that to lessen the envy of it, he would at the same time stretch forth his hand towards a statue of Julius Cæsar which was erected in the place; whereat men laughed, and applauded, and wondered, and said to one another, "What is this? What sort of young man is this?" and yet thought a man could mean no mischief who spoke his feelings so openly and ingenuously. Now all these, whom I have mentioned, were prosperous; whereas Pompey, who tended to the same ends, but in a more dark and dissembling manner (as Tacitus says of him, "A more reserved, but not a better character [99]"; wherein Sallust concurs, "Of honest tongue and shameless mind [100]"), made it his design, and attempted by innumerable intrigues to keep his own ambition and desires quite secret, and in the mean time to drive the state into such anarchy and confusion that it should be forced of necessity to cast itself into his arms, and the sovereign power might thus be thrust upon him, apparently against his will and inclination. But when he had brought it, as he thought, to this point, when he was chosen sole consul (as no one had ever been before), yet was he no way nearer to his ends; because they who certainly would have assisted him did not understand what he wanted; so that in the end he was fain to go on the common and beaten track of procuring arms and raising an army under colour of opposing Cæsar; so tedious, uncertain, and mostly unfortunate are those designs which are concealed beneath a deep dissimulation. And this appears to have been the feeling of Tacitus, when he constitutes the artifices of dissimulation as a wisdom of an inferior form to the arts of true policy, attributing the former to Tiberius, but the latter to Augustus; for speaking of Livia, he says, "That she was equally suited to the arts of her husband, and the dissimulation of her son [101]".

With regard to turning and shaping the mind, we must strive with all possible endeavour to render the mind obedient to occasions and opportunities, and to be no ways obstinate and refractory towards them. For nothing hinders men's actions or fortunes so much as this, "to remain the same, when the same is unbecoming [102]"; that is, for men to be as they were, and follow their own nature, when occasions change: whence Livy, in introducing Cato the Elder, as a most skilful architect of his fortune, adds well of him, "That he had a wit that could turn [103]". This also is the reason why grave and solemn wits, which know not how to change, have generally more dignity than good fortune. But this viscous and knotty temper which is so averse to change is nature in some; in others it is the result of habit (which is a second nature), and an opinion (which easily steals into men's minds), namely, that men can hardly make themselves believe that they ought to change that course which they have found by experience to be prosperous and successful. For Machiavelli notes wisely, how Fabius Maximus would have retained to the last his old habit of temporising and protracting the war, when the nature of the war was altered and required more vigorous measures [104]. In others again the fault arises from weakness of judgment, that they do not discern in time when things or actions have reached a period, but come in too late, when the occasion has passed by; as Demosthenes says, when in reproving the Athenians he compares them to country fellows, who, in playing in the fencing school, when they have received a blow, always remove their shield to that ward, and not before [105]. In others again it is a dislike to lose

[96] Plutarch's *Apophthegms*.
[97] Cic. *Ep. ad Attic.* x, 4.
[98] Cic. *ad Attic.* xvi. 15.
[99] Tac. *Hist.* ii. 38.
[100] Cf. Sueton. *de Claris Grammaticis*, c. 15.
[101] Tac. *Ann.* v. 1.
[102] Cf. Cic. *de Clar. Orat.* c. 95: Idem manebat neque idem decebat.
[103] Livy, xxxix. 40. [104] Machiavelli, *Discorsi*, iii. 9. [105] Demosth. 1 *Philipp.* 46.

their labours in the path which they have once entered, and an unwillingness to sound the retreat, with a confidence that by perseverance they will overcome the occasion. But from whatsoever root this stubbornness and restiveness of mind proceeds, it is a thing most prejudicial to man's actions and fortunes; and nothing is more politic than to make the wheels of the mind concentric and voluble with the wheels of fortune. And so much for the two summary precepts of this Architecture of Fortune; whereof the scattered precepts are numerous, but I will select a few for example's sake.

The first precept is that the carpenter of fortune should make a good use and a right application of his rule; that is, that he should accustom his mind to judge of the proportion and value of all things, as they conduce more or less to his fortune and ends, and that he do this substantially, not superficially. It is a thing strange, but true, that the logical part (if I may so term it) of many men's minds is good, but the mathematical part erroneous; that is, they can judge well enough of the consequences, but most unskilfully of the values of things; whence it happens that some take delight in private and secret converse with princes, others in popular fame and applause, supposing them to be things of great value; whereas in many cases they are full both of envy and peril. Others again measure things according to the labour and difficulty bestowed upon them, and think if they be only moving they must needs advance and proceed; as Cæsar said ironically of Cato of Utica, when he describes how laborious and assiduous and indefatigable he was to no great purpose, "All these things he did with much earnestness [106]". Hence too it comes that men often deceive themselves, in thinking that if they procure the assistance of any man of worth and reputation, they are certain to succeed; whereas it is not the greatest but the fittest instruments that finish the work both quickest and best. Now for the true information of the mathematical part of the mind, it is worth while to know and have a description of what should be set down first for the raising and advancing of a man's own fortune, what second, and so on. First I set down the amendment of the mind; for the removing of impediments and working out the knots of the mind will sooner open the passage to fortune, than the obtaining of fortune will remove the impediments of the mind. In the second place I set down wealth and means, which many perhaps would have placed first, because of their great use in everything; but that opinion I may condemn, for the reason which Machiavelli gave in a case not much unlike. For whereas there was an old proverb, "that money is the sinews of war [107]", yet he maintained on the contrary that the true sinews of war are nothing else than the sinews of a valiant and military people. And so in like manner it may be truly affirmed, that it is not money that is the sinews of fortune, but it is rather the sinews of the mind, wit, courage, audacity, resolution, temper, industry, and the like. In the third place, I set down character and reputation, the rather because they have certain tides and seasons, which if they be not taken in due time are difficult to be recovered, it being extremely hard to restore a falling reputation. And lastly, I place honour, which is more easily won by any of the other three, much more by all combined, than if you begin with honour, and then proceed to the rest. But as it is of no little consequence to preserve order in matter, so it is of no less consequence to preserve order in time, the confusion whereof is one of the commonest errors; while men fly to their ends, when they should only be attending to their beginnings; and carelessly passing over the things which lie before them they rush at once to the highest and greatest of all; whereas it is a good precept, "Attend to present business [108]".

A second precept is to beware of being carried by an excess of magnanimity and confidence to things beyond our strength, and not to row against the stream. It is excellent counsel regarding men's fortunes, "Be ruled by the Fates and the Gods [109]"; for we ought to look round and observe where things lie open to us and where they are closed and obstructed, where they are difficult and where

[106] Cæs. *Bell. Civil.* i. 30. [107] Machiavelli, *Discorsi*, ii. 10; and cf. Cicero, Philip. v.
[108] Virg. *Eclog.* ix. 66: Quod nunc instat agamus.
[109] Lucan, viii. 486: Fatis accede Deisque.

easy, that we may not waste our strength on things to which convenient access is forbidden. For in this way we shall avoid repulse, not occupy ourselves too much about one matter, earn a character for moderation, offend fewer persons, and get the credit of continual success; whilst things which would perhaps have happened of themselves will be attributed to our industry.

The third precept seems to be somewhat repugnant to the former two, though not so if rightly understood. The nature of it is this, that we should not always wait for occasions, but sometimes challenge and induce them; and it is that to which Demosthenes alludes in high terms, "In the same manner as it is a received principle that the general should lead the army, so should wise men lead affairs, causing things to be done which they think good, and not themselves waiting upon events [110]". For if we diligently observe, we shall find two different kinds of sufficiency in performing actions and managing business. Some can make an apt use of occasions, but plot or invent nothing of themselves; others are wholly bent on their own plots, but cannot take advantage of accidental opportunities; either of which abilities without the other is very lame and imperfect.

A fourth precept is to undertake nothing which of necessity takes up a great quantity of time, but to have this sound ever ringing in our ears, "time is flying, time which cannot be retrieved [111]". And this is the reason why those who have devoted themselves to laborious professions and the like, as lawyers, orators, learned divines, and writers of books, are not so clever in founding and promoting their own fortunes; because their time is so much occupied with other things that they cannot investigate particulars, wait occasions, and devise and meditate on plots to advance their fortunes. Moreover, in the courts of princes and in commonwealths you will find that the ablest persons both to improve their own fortunes and to assail the fortunes of others are those who have no public duty to perform, but are ever occupied in this study of advancement in life.

A fifth precept is to a certain degree to imitate nature, which does nothing in vain; no very difficult task, if a man will skilfully mix and interlace his several kinds of business. For in every particular action a man ought so to direct and prepare his mind, and should have one intention so underlying and subordinate to another, that if he cannot obtain his wishes in the best degree, he may yet be satisfied if he succeed in a second, or even a third; and if he cannot obtain them at all in that particular, then he may turn the labour spent in it to some other end besides the one intended; and if he cannot reap any fruit of it for the present, he may yet make it as a seed of somewhat in time to come; and if he can derive no substance from it either now or hereafter, he may try at all events to win some good opinion by it, or the like; by always exacting an account of himself, by which it may appear that each action and scheme has borne him some fruit more or less, and never allowing himself to stand amazed and confused, or to despond immediately that he fails to hit his chief mark. For nothing is more impolitic than to be entirely bent on one action. He that is so loses an infinite number of occasions, which indirectly fall out by the way, and are perhaps more proper and propitious for the future use than for the present matter; wherefore men must be perfect in that rule, "These things ought ye to do, and not to leave the others undone [112]".

A sixth precept is not to engage oneself too peremptorily in anything, though at first sight it seem not liable to accident; but ever to have either a window open to fly out at, or a secret way to retire by.

A seventh precept is that ancient precept of Bias, not construed to any point of perfidiousness, but only to caution and moderation, "Love as if you were sometime to hate, and hate as if you were sometime to love [113]"; for it utterly

[110] Demosth. *Philip.* i. 45.

[111] Virg. *Georg.* iii. 284:—

Sed fugit interea, fugit irreparabile tempus.

[112] St. Matth. xxiii. 23; St. Luke, xi. 42.

[113] La Bruyère's remarks on this precept are, I think, worth transcribing —"Vivre avec nos ennemis comme s'ils devoient un jour être nos amis, et vivre avec nos amis comme s'ils pouvoient devenir nos ennemis, n'est ni selon la nature de la haine, ni selon les règles

betrays and destroys all utility, for men to embark themselves too far in unfortunate friendships, troublesome and turbulent quarrels, or foolish and childish jealousies and emulations.

These will suffice for an example of the doctrine of advancement in life. I would however have it frequently remembered, that I am far from meaning that these sketches of things which I note as deficients should be set down as complete treatises, but only as shreds or fragments to serve as samples of the whole piece. Nor again am I so foolish as to assert that fortunes are not gained without all this contrivance which I have mentioned. For I well know they come tumbling into some men's laps; and that others only obtain them by simple diligence and attention (using only a little caution), without any great or laborious art. But as Cicero, in his portrait of a perfect orator, does not mean that every pleader should be or can be such; and again, as in the description of a prince or courtier by such as have handled those subjects, the model is always framed according to the perfection of the art, and not according to common practice; so likewise have I done in the description of a politic man, I mean politic for his own fortune.

But it must be remembered all this while, that the precepts which I have selected and set down on this subject are of that kind which may be called *Good Arts*. As for *Evil Arts*, if a man would propose to himself that principle of Machiavelli, "that virtue itself a man should not trouble himself to attain, but only the appearance thereof to the world, because the credit and reputation of virtue is a help, but the use of it is an impediment"; or again, that other principle of his "that a politic man should have for the basis of his policy the assumption that men cannot fitly or safely be wrought upon otherwise than by fear; and should therefore endeavour to have every man, as far as he can contrive it, dependent and surrounded by straits and perils [114]"; so that his politician would appear to be what the Italians call "A sower of thorns:" or that principle embodied in the verse quoted by Cicero, "Let friends fall, provided our enemies perish with them [115]"; as the Triumvirs did, who with the lives of their friends purchased the destruction of their enemies: or if he would be an imitator of L. Catiline, to set on fire and trouble states, that he may the better fish in muddy waters and make way for his own fortune; "For," said he, "if a fire be lighted in my fortunes, I will quench it, not with water, but with destruction [116]": or if he would make his own that saying of Lysander, "that children are to be deceived with comfits, and men with oaths [117]"; with the like depraved and pernicious doctrines, whereof (as in all other things) there are a greater number than of the wise and good: if any one, I say, takes pleasure in such kind of corrupt wisdom, I

de l'amitié: ce n'est point une maxime morale, mais politique. On ne doit pas se faire des ennemis de ceux qui mieux connus pourroient avoir rang entre nos amis. On doit faire choix d'amis si sûrs et d'une si exacte probité que venant à cesser de l'être, ils ne veuillent pas abuser de notre confiance, ni se faire craindre comme nos ennemis."—*Les Caractères*, c. 4.

[La Bruyère's rule would, I think, be perfect, if it were possible to make a certain judgment of each man's character beforehand. The defect of it is, that, taking no account of the necessary uncertainty of all such judgments, it fails to give any practical direction in the real affairs of life. Put it thus:—"Treat no man as your enemy unless you are *sure* that he can never deserve to be your friend, make no man your friend unless you are *sure* that he will never become your enemy;"—and your practical direction becomes much the same as that of Bias. The question which in morals is really disputable is whether a man should encourage himself to doubt other men, or not to doubt; and this, being a question of more or less, cannot be determined except in reference to particular cases. No man will say generally either that you cannot doubt too much, or that you cannot doubt too little. Perhaps the best general direction that can be given is to lean *against* your natural inclination whichever way it goes. If you are naturally inclined to distrust appearances, trust them more; if to trust, trust them less.—*J. S.*]

[114] Cf. Machiavelli, *Principle*. c. 17, 18.

[115] Cic. *pro Deiotaro*, c. 9.

[116] Cic. *pro Muræn*. c. 25; Sallust, *Cat*. c. 31.

[117] Plut. in Lysand. c. 8. The saying seems, however, not to be Lysander's. He apparently adopted it from Polycrates of Samos.

will not certainly deny that (with these dispensations from all the laws of charity and virtue, and an entire devotion to the pressing of his fortune,) he may advance it quicker and more compendiously. But it is in life as it is in ways, the shorter way is commonly the foulest and muddiest, and surely the fairer way is not much about.

But men ought to be so far removed from devoting themselves to wicked arts of this nature, that rather (if they are only in their own power, and can bear and sustain themselves without being carried away by a whirlwind or tempest of ambition) they ought to set before their eyes not only that general map of the world, "that all things are vanity and vexation of spirit[118]", but also that more particular chart, namely, "that being without well-being is a curse, and the greater being the greater curse"; and "that all virtue is most rewarded, and all wickedness most punished in itself;" as the poet excellently says:—

> Quæ vobis, quæ digna, viri, pro laudibus istis
> Præmia posse rear solvi? pulcherrima primum
> Dii moresque dabunt vestri[119].

And so on the other hand, it is no less truly said of the wicked, "His own manners will be his punishment[120]". Secondly, men in projecting their schemes and diffusing their thoughts abroad on every side, in order to forecast and advance their fortunes, ought in the midst of these flights of the mind to look up to the Eternal Providence and Divine Judgment, which often overthrows and brings to nought the machinations and evil designs of the wicked, however deeply laid; according to that Scripture, "He hath conceived mischief, and shall bring forth a vain thing[121]". Moreover, although men should refrain themselves from injury and evil arts, yet this incessant, restless,and as it were sabbathless pursuit of fortune leaves not the tribute which we owe to God of our time; whom we see demands and separates for himself a tenth part of our substance, but a seventh of our time. For what advantage is it to have a face erected towards heaven, with a spirit perpetually grovelling upon earth, eating dust like the serpent? As the heathen also observed, "the particle of the Divine Spirit cleaves to the ground[122]". But if here any man flatter himself, that he will employ his fortune well, though he should obtain it ill; as was said concerning Augustus Cæsar, and Septimius Severus, "that either they should never have been born, or else they should never have died[123]", they did so much mischief in their rise to greatness, and so much good when they were established; yet, let him bear in mind that such compensations of evil with good are to be approved after the evil is done, but that such counsels are to be condemned. Lastly, it will not be amiss for men, in this eager and excited chase of fortune, to cool themselves a little with that conceit which is elegantly expressed by the Emperor Charles the Fifth in his instructions to his son, "That fortune has somewhat of the nature of a woman, who, if she is too much wooed, is commonly the further off[124]". But this last is only a remedy for those whose tastes are corrupted by a disorder of the mind. Let men rather build upon that foundation, which is as a corner stone of both Divinity and Philosophy, wherein they nearly agree as to that which ought to be

[118] Eccles. ii. 11.

[119] Virg. *Æn.* ix. 252:—

> Ye brave young men, what equal gifts can we,
> In recompense of such desert, decree?
> The greatest, sure, and best you can receive,
> The gods and your own conscious worth will give.

[120] Cic. *Ep. ad Att.* ix. 12.

[121] Psalm vii. 14, or Job, xv. 35.

[122] Hor. *Sat.* ii. 2. 79: Atque affigit humo divinæ particulam auræ.

[123] Aurelius Victor, Epit. c. 1. Lampridius de Severo.

[124] It was on being obliged to raise the siege of Metz that Charles V. remarked that Fortune was like a woman,—that, after having favoured him in his youth, she turned against him when he was no longer young. There are, I believe, several papers of instructions addressed by him to Philip II. In one or two which I have seen the remark mentioned in the text does not appear to occur.