

FRANCIS BACON

The Four Idols (pp. 417-433)

Paragraphs 1-7: Four classes of idols and false notions interfere with the human mind's ability to perceive the truth. The best remedy for them is inductive reasoning. Idols of the Tribe are distortions arising from the limits of human perception and understanding. Idols of the Cave arise from individual idiosyncrasies and experience. Idols of the Marketplace are caused by the imprecision of language; and Idols of the Theater result from misleading philosophies and principles.

8-16: Human understanding has several tendencies that comprise the Idols of the Tribe. We impute more order and regularity to the world than it actually contains. We ignore evidence that conflicts with our preconceptions. We base our preconceptions on those phenomena that strike us most readily, rather than on a thorough examination of our surroundings. We muddy our observations with unjustified interpretations. What we believe is colored by our wishes. We trust our senses for information that should be obtained by experiment.

17-22: The Idols of the Cave come from an individual's physical and mental constitution as well as education and experience. The most important are men's gravitation toward a favorite subject, shaping their other ideas around it; their tendency to attend too closely to either the similarities or the differences between things; their partiality to a particular age and its judgments; and their inclination to focus on the minute aspects of a thing while ignoring the large and general, or vice versa.

23-26: Most troublesome of all are the Idols of the Marketplace, misconceptions that have crept in through words and names. Words tend to oversimplify what they represent. Some words name things that do not exist or that are ill defined; others can be interpreted in a variety of ways and lack a clear, specific meaning. Different classes of words—nouns, verbs, adjectives—contain different degrees of distortion.

27-28: Idols of the Theater are not covertly and inevitably deceptive like Idols of the Marketplace but are presented to the mind by incorrect philosophies and methods of investigating the world. The preferable method of investigation would not rely on individual intelligence and reasoning but on objective observation.

29-34: Most philosophies abstract too much from too little evidence, or vice versa. Some manipulate the facts to conform with their ideas; others interweave science and superstition. The last is most widespread and dangerous, as can be seen in certain Greek and subsequent schools that offer religious and other nonobjective explanations for natural phenomena.

35: Human understanding must be cleansed of the Idols' misconceptions; for those who would enter the kingdom of man founded on science, like the kingdom of heaven, must come as a little child.



FRANCIS BACON

The Four Idols

FRANCIS BACON, Lord Verulam (1561–1626), lived during one of the most exciting times in history. Among his contemporaries were the essayist Michel de Montaigne; the playwrights Christopher Marlowe and William Shakespeare; the adventurer Sir Francis Drake; and Queen Elizabeth I, in whose reign Bacon held several high offices. He became lord high chancellor of England in 1618 but fell from power in 1621 through a complicated series of events, among which was his complicity in a bribery scheme. His so-called crimes were minor, but he paid dearly for them. His book *Essays* (1597) was exceptionally popular during his lifetime, and when he found himself without a proper job, he devoted himself to what he declared to be his own true work: writing about philosophy and science.

His purpose in *Novum Organum* (The new organon), published in 1620, was to replace the old organon, or instrument of thought, Aristotle's treatises on logic and thought. Despite Aristotle's pervasive influence on sixteenth- and seventeenth-century thought — his texts were used in virtually all schools and colleges — Bacon thought that Aristotelian deductive logic produced error. In *Novum Organum* he tried to set the stage for a new attitude toward logic and scientific inquiry. He proposed a system of reasoning usually referred to as induction. This quasi-scientific method involves collecting and listing observations from nature. Once a mass of observations is gathered and organized, Bacon believed, the truth about what is observed will become apparent.

Bacon is often mistakenly credited with having invented the scientific method of inquiring into nature; but although he was right about the need for collecting and observing, he was wrong

what?

③ about the outcome of such endeavors. After all, one could watch an infinite number of apples (and oranges, too) fall to the ground without ever having the slightest sense of why they do so. What Bacon failed to realize—and he died before he could become scientific enough to realize it—is the creative function of the scientist as expressed in the hypothesis. The hypothesis—an educated guess about why something happens—must be tested by the kinds of observations Bacon recommended.

④ Nonetheless, "The Four Idols" is a brilliant work. It does establish the requirements for the kind of observation that produces true scientific knowledge. Bacon despaired of any thoroughly objective inquiry in his own day, in part because no one paid attention to the ways in which the idols, limiting preconceptions, strangled thought, observation, and imagination. He realized that the would-be natural philosopher was foiled even before he began. Bacon was a farsighted man. He was correct about the failures of science in his time; and he was correct, moreover, in his assessment that advancement would depend on sensory perception and on aids to perception, such as microscopes and telescopes. The real brilliance of "The Four Idols" lies in Bacon's focus not on what is observed but on the instrument of observation—the human mind. Only when the instrument is freed of error can we rely on its observations to reveal the truth.

happens = what
reason = why
hypothesis

culture
not really

down
of
science

The Four Idols

The idols¹ and false notions which are now in possession of the human understanding, and have taken deep root therein, not only so beset men's minds that truth can hardly find entrance, but even after entrance obtained, they will again in the very instauration² of the sciences meet and trouble us, unless men being forewarned of the danger fortify themselves as far as may be against their assaults.

There are four classes of idols which beset men's minds. To these for distinction's sake I have assigned names—calling the first class *Idols of the Tribe*; the second, *Idols of the Cave*; the third, *Idols of the Marketplace*; the fourth, *Idols of the Theater*.

The formation of ideas and axioms by true induction³ is no doubt the proper remedy to be applied for the keeping off and clearing away of idols. To point them out, however, is of great use; for the doctrine of idols is to the interpretation of nature what the doctrine of the refutation of sophisms⁴ is to common logic.

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

The *Idols of the Cave* are the idols of the individual man. For everyone (besides the errors common to human nature in general) has a cave or den of his own, which refracts⁵ and discolors the light of nature; owing either to his own proper and peculiar nature; or to his education and conversation with others; or to the reading of books, and the authority of those whom he esteems and admires; or

¹**idols** By this term Bacon means phantoms or illusions. The Greek philosopher Democritus spoke of *eidola*, tiny representations of things that impressed themselves on the mind (see note 21).

²**instauration** Institution.

³**induction** Bacon championed induction as the method by which new knowledge is developed. As he saw it, induction involved a patient gathering and categorizing of facts in the hope that a large number of them would point to the truth. As a process of gathering evidence from which inferences are drawn, induction is contrasted with Aristotle's method, *deduction*, according to which a theory is established and the truth deduced. Deduction places the stress on the authority of the expert; induction places the stress on the facts themselves.

to the differences of impressions, accordingly as they take place in a mind preoccupied and predisposed or in a mind indifferent and settled; or the like. So that the spirit of man (according as it is meted out to different individuals) is in fact a thing variable and full of perturbation,⁶ and governed as it were by chance. Whence it was well observed by Heraclitus⁷ that men look for sciences in their own lesser worlds, and not in the greater or common world.

There are also idols formed by the intercourse and association of men with each other, which I call *Idols of the Marketplace*, on account of the commerce and consort of men there. For it is by discourse that men associate; and words are imposed according to the apprehension of the vulgar.⁸ And therefore the ill and unfit choice of words wonderfully obstructs the understanding. Nor do the definitions or explanations wherewith in some things learned men are wont⁹ to guard and defend themselves, by any means set the matter right. But words plainly force and overrule the understanding, and throw all into confusion and lead men away into numberless empty controversies and idle fancies.

Lastly, there are idols which have immigrated into men's minds from the various dogmas of philosophies, and also from wrong laws of demonstration.¹⁰ These I call *Idols of the Theater*; because in my judgment all the received systems¹¹ are but so many stage-plays, representing worlds of their own creation after an unreal and scenic fashion. Nor is it only of the systems now in vogue, or only of the ancient sects and philosophies, that I speak; for many more plays of the same kind may yet be composed and in like artificial manner set forth; seeing that errors the most widely different have nevertheless causes for the most part alike. Neither again do I mean this only of entire systems, but also of many principles and axioms in science, which by tradition, credulity, and negligence, have come to be received.

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

⁶**perturbation** Uncertainty, disturbance. In astronomy, the motion caused by the gravity of nearby planets.

⁷**Heraclitus (535?–475? B.C.)** Greek philosopher who believed that there was no reality except in change; all else was illusion. He also believed that fire was the basis of all the world and that everything we see is a transformation of it.

⁸**vulgar** Common people.

⁹**wont** Accustomed.

¹⁰**laws of demonstration** Bacon may be referring to Aristotle's logical system.

The human understanding is of its own nature prone to suppose 9
the existence of more order and regularity in the world than it finds.
And though there be many things in nature which are singular and
unmatched, yet it devises for them parallels and conjugates and rela-
tives¹² which do not exist. Hence the fiction that all celestial bodies
move in perfect circles; spirals and dragons being (except in name)
utterly rejected. Hence too the element of fire with its orb is brought
in, to make up the square with the other three which the sense per-
ceives. Hence also the ratio of density¹³ of the so-called elements is
arbitrarily fixed at ten to one. And so on of other dreams. And these
fancies affect not dogmas only, but simple notions also.

The human understanding when it has once adopted an opin- 10
ion (either as being the received opinion or as being agreeable to it-
self) draws all things else to support and agree with it. And though
there be a greater number and weight of instances to be found on
the other side, yet these it either neglects and despises, or else by
some distinction sets aside and rejects; in order that by this great
and pernicious predetermination the authority of its former conclu-
sions may remain inviolate. And therefore it was a good answer that
was made by one who when they showed him hanging in a temple a
picture of those who had paid their vows as having escaped ship-
wreck, and would have him say whether he did not now acknowl-
edge the power of the gods—"Ay," asked he again, "but where are
they painted that were drowned after their vows?" And such is the
way of all superstition, whether in astrology, dreams, omens, divine
judgments, or the like; wherein men having a delight in such vani-
ties, mark the events where they are fulfilled, but where they fail,
though this happen much oftener, neglect and pass them by. But
with far more subtlety does this mischief insinuate itself into philos-
ophy and the sciences; in which the first conclusion colors and
brings into conformity with itself all that come after, though far
sounder and better. Besides, independently of that delight and vani-
ty which I have described, it is the peculiar and perpetual error of
the human intellect to be more moved and excited by affirmatives
than by negatives; whereas it ought properly to hold itself indiffer-
ently disposed towards both alike. Indeed, in the establishment of
any true axiom, the negative instance is the more forcible of the two.

¹² **parallels and conjugates and relatives** A reference to the habit of assum-
ing that phenomena are regular and ordered, consisting of squares, triangles, circles,
and other regular shapes.

¹³ **ratio of density** The false assumption that the relationship of mass or weight

The human understanding is moved by those things most 11
which strike and enter the mind simultaneously and suddenly, and
so fill the imagination; and then it feigns and supposes all other
things to be somehow, though it cannot see how, similar to those
few things by which it is surrounded. But for that going to and fro to
remote and heterogeneous instances, by which axioms are tried as in
the fire,¹⁴ the intellect is altogether slow and unfit, unless it be
forced thereto by severe laws and overruling authority.

The human understanding is unquiet; it cannot stop or rest, and 12
still presses onward, but in vain. Therefore it is that we cannot con-
ceive of any end or limit to the world, but always as of necessity it
occurs to us that there is something beyond. Neither again can it be
conceived how eternity has flowed down to the present day; for that
distinction which is commonly received of infinity in time past and
in time to come can by no means hold; for it would thence follow
that one infinity is greater than another, and that infinity is wasting
away and tending to become finite. The like subtlety arises touching
the infinite divisibility of lines,¹⁵ from the same inability of thought
to stop. But this inability interferes more mischievously in the dis-
covery of causes:¹⁶ for although the most general principles in na-
ture ought to be held merely positive, as they are discovered, and
cannot with truth be referred to a cause; nevertheless, the human
understanding being unable to rest still seeks something prior in the
order of nature. And then it is that in struggling towards that which
is further off, it falls back upon that which is more nigh at hand;
namely, on final causes: which have relation clearly to the nature of
man rather than to the nature of the universe, and from this source

¹⁴ **tried as in the fire** Trial by fire is a figure of speech representing thorough,
rigorous testing even to the point of risking what is tested. An axiom is a statement
of apparent truth that has not yet been put to the test of examination and investiga-
tion.

¹⁵ **infinite divisibility of lines** This gave rise to the paradox of Zeno, the Greek
philosopher of the fifth century B.C. who showed that it was impossible to get from
one point to another because one had to pass the midpoint of the line determined by
the two original points, and then the midpoint of the remaining distance, and then
of that remaining distance, down to an infinite number of points. By using accepted
truths to "prove" an absurdity about motion, Zeno actually hoped to prove that mo-
tion itself did not exist. This is the "subtlety," or confusion, Bacon says is produced
by the "inability of thought to stop."

¹⁶ **discovery of causes** Knowledge of the world was based on four causes: effi-
cient (who made it?), material (what is it made of?), formal (what is its shape?),
and final (what is its purpose?). The scholastics concentrated their thinking on the
first and last, whereas the "middle causes" are the most important.

have strangely defiled philosophy. But he is no less an unskilled and shallow philosopher who seeks causes of that which is most general, than he who in things subordinate and subaltern¹⁷ omits to do so.

The human understanding is no dry light, but receives an infusion from the will and affections;¹⁸ whence proceed sciences which may be called "sciences as one would." For what a man had rather were true he more readily believes. Therefore he rejects difficult things from impatience of research; sober things, because they narrow hope; the deeper things of nature, from superstition; the light of experience, from arrogance and pride, lest his mind should seem to be occupied with things mean and transitory; things not commonly believed, out of deference to the opinion of the vulgar. Numberless in short are the ways, and sometimes imperceptible, in which the affections color and infect the understanding.

But by far the greatest hindrance and aberration of the human understanding proceeds from the dullness, incompetency, and deceptions of the senses; in that things which strike the sense outweigh things which do not immediately strike it, though they be more important. Hence it is that speculation commonly ceases where sight ceases; insomuch that of things invisible there is little or no observation. Hence all the working of the spirits¹⁹ enclosed in tangible bodies lies hid and unobserved of men. So also all the more subtle changes of form in the parts of coarser substances (which they commonly call alteration, though it is in truth local motion through exceedingly small spaces) is in like manner unobserved. And yet unless these two things just mentioned be searched out and brought to light, nothing great can be achieved in nature, as far as the production of works is concerned. So again the essential nature of our common air, and of all bodies less dense than air (which are very many) is almost unknown. For the sense by itself is a thing infirm and erring; neither can instruments for enlarging or sharpening the senses do much; but all the truer kind of interpretation of nature is effected by instances and experiments fit and apposite;²⁰ wherein the sense decides touching the experiment only, and the experiment touching the point in nature and the thing itself.

¹⁷ **subaltern** Lower in status.

¹⁸ **will and affections** Human free will and emotional needs and responses.

¹⁹ **spirits** The soul or animating force.

²⁰ **apposite** Appropriate; well related.

The human understanding is of its own nature prone to abstractions and gives a substance and reality to things which are fleeting. But to resolve nature into abstractions is less to our purpose than to dissect her into parts; as did the school of Democritus,²¹ which went further into nature than the rest. Matter rather than forms should be the object of our attention, its configurations and changes of configuration, and simple action, and law of action or motion; for forms are figments of the human mind, unless you will call those laws of action forms.

Such then are the idols which I call *Idols of the Tribe*; and which take their rise either from the homogeneity of the substance of the human spirit,²² or from its preoccupation, or from its narrowness, or from its restless motion, or from an infusion of the affections, or from the incompetency of the senses, or from the mode of impression.

The *Idols of the Cave* take their rise in the peculiar constitution, mental or bodily, of each individual; and also in education, habit, and accident. Of this kind there is a great number and variety; but I will instance those the pointing out of which contains the most important caution, and which have most effect in disturbing the clearness of the understanding.

Men become attached to certain particular sciences and speculations, either because they fancy themselves the authors and inventors thereof, or because they have bestowed the greatest pains upon them and become most habituated to them. But men of this kind, if they betake themselves to philosophy and contemplations of a general character, distort and color them in obedience to their former fancies; a thing especially to be noticed in Aristotle,²³ who made his natural philosophy²⁴ a mere bondservant to his logic, thereby rendering it contentious and well nigh useless. The race of chemists²⁵

²¹ **Democritus (460?–370? B.C.)** Greek philosopher who thought the world was composed of atoms. Bacon felt such "dissection" to be useless because it was impractical. Yet Democritus's concept of the *eidola*, the mind's impressions of things, may have contributed to Bacon's idea of "the idol."

²² **human spirit** Human nature.

²³ **Aristotle (384–322 B.C.)** Greek philosopher whose *Organon* (system of logic) dominated the thought of Bacon's time. Bacon sought to overthrow Aristotle's hold on science and thought.

²⁴ **natural philosophy** The scientific study of nature in general—biology, zoology, geology, etc.

²⁵ **chemists** Alchemists had developed a "fantastic philosophy" from their experimental attempts to transmute lead into gold.

again out of a few experiments of the furnace have built up a fantastic philosophy, framed with reference to a few things; and Gilbert²⁶ also, after he had employed himself most laboriously in the study and observation of the loadstone, proceeded at once to construct an entire system in accordance with his favorite subject.

There is one principal and, as it were, radical distinction between different minds, in respect of philosophy and the sciences, which is this: that some minds are stronger and apter to mark the differences of things, others to mark their resemblances. The steady and acute mind can fix its contemplations and dwell and fasten on the subtlest distinctions: the lofty and discursive mind recognizes and puts together the finest and most general resemblances. Both kinds however easily err in excess, by catching the one at gradations, the other at shadows.

There are found some minds given to an extreme admiration of antiquity, others to an extreme love and appetite for novelty; but few so duly tempered that they can hold the mean, neither carping at what has been well laid down by the ancients, nor despising what is well introduced by the moderns. This however turns to the great injury of the sciences and philosophy; since these affectations of antiquity and novelty are the humors²⁷ of partisans rather than judgments; and truth is to be sought for not in the felicity of any age, which is an unstable thing, but in the light of nature and experience, which is eternal. These factions therefore must be abjured,²⁸ and care must be taken that the intellect be not hurried by them into assent.

Contemplations of nature and of bodies in their simple form break up and distract the understanding, while contemplations of nature and bodies in their composition and configuration overpower and dissolve the understanding: a distinction well seen in the school of Leucippus²⁹ and Democritus as compared with the other philosophies. For that school is so busied with the particles that it hardly attends to the structure; while the others are so lost in admiration of the structure that they do not penetrate to the simplicity of nature. These kinds of contemplation should therefore be alternated and taken by turns; that so the understanding may be rendered at once

²⁶ **William Gilbert (1544–1603)** An English scientist who studied magnetism and codified many laws related to magnetic fields. He was particularly ridiculed by Bacon for being too narrow in his researches.

²⁷ **humors** Used in a medical sense to mean a distortion caused by imbalance.

²⁸ **abjured** Renounced, sworn off, repudiated.

penetrating and comprehensive, and the inconveniences above mentioned, with the idols which proceed from them, may be avoided.

Let such then be our provision and contemplative prudence for keeping off and dislodging the *Idols of the Cave*, which grow for the most part either out of the predominance of a favorite subject, or out of an excessive tendency to compare or to distinguish, or out of partiality for particular ages, or out of the largeness or minuteness of the objects contemplated. And generally let every student of nature take this as a rule—that whatever his mind seizes and dwells upon with peculiar satisfaction is to be held in suspicion, and that so much the more care is to be taken in dealing with such questions to keep the understanding even and clear.

But the *Idols of the Marketplace* are the most troublesome of all: idols which have crept into the understanding through the alliances of words and names. For men believe that their reason governs words; but it is also true that words react on the understanding; and this it is that has rendered philosophy and the sciences sophistical and inactive. Now words, being commonly framed and applied according to the capacity of the vulgar, follow those lines of division which are most obvious to the vulgar understanding. And whenever an understanding of greater acuteness or a more diligent observation would alter those lines to suit the true divisions of nature, words stand in the way and resist the change. Whence it comes to pass that the high and formal discussions of learned men end oftentimes in disputes about words and names; with which (according to the use and wisdom of the mathematicians) it would be more prudent to begin, and so by means of definitions reduce them to order. Yet even definitions cannot cure this evil in dealing with natural and material things; since the definitions themselves consist of words, and those words beget others: so that it is necessary to recur to individual instances, and those in due series and order; as I shall say presently when I come to the method and scheme for the formation of notions and axioms.³⁰

Idols of the Theater, or of systems, are many, and there can be 29
and perhaps will be yet many more. For were it not that now for
many ages men's minds have been busied with religion and theol-
ogy; and were it not that civil governments, especially monarchies,
have been averse to such novelties, even in matters speculative; so
that men labor therein to the peril and harming of their fortunes—
not only unrewarded, but exposed also to contempt and envy;
doubtless there would have arisen many other philosophical sects
like to those which in great variety flourished once among the
Greeks. For as on the phenomena of the heavens many hypotheses
may be constructed, so likewise (and more also) many various
dogmas may be set up and established on the phenomena of
philosophy. And in the plays of this philosophical theater you may

observe the same thing which is found in the theater of the poets,
that stories invented for the stage are more compact and elegant,
and more as one would wish them to be, than true stories out of
history.

In general, however, there is taken for the material of philoso- 30
phy either a great deal out of a few things, or a very little out of
many things; so that on both sides philosophy is based on too nar-
row a foundation of experiment and natural history, and decides on
the authority of too few cases. For the rational school of philoso-
phers³⁶ snatches from experience a variety of common instances,
neither duly ascertained nor diligently examined and weighed, and
leaves all the rest to meditation and agitation of wit.

There is also another class of philosophers,³⁷ who having be- 31
stowed much diligent and careful labor on a few experiments, have
thence made bold to educe and construct systems; wresting all other
facts in a strange fashion to conformity therewith.

And there is yet a third class,³⁸ consisting of those who out of 32
faith and veneration mix their philosophy with theology and tradi-
tions; among whom the vanity of some has gone so far aside as to
seek the origin of sciences among spirits and genii.³⁹ So that this
parent stock of errors—this false philosophy—is of three kinds;
the sophistical, the empirical, and the superstitious. . . .

But the corruption of philosophy by superstition and an admix- 33
ture of theology is far more widely spread, and does the greatest
harm, whether to entire systems or to their parts. For the human un-
derstanding is obnoxious to the influence of the imagination no less
than to the influence of common notions. For the contentious and
sophistical kind of philosophy ensnares the understanding; but this
kind, being fanciful and tumid⁴⁰ and half poetical, misleads it more

by flattery. For there is in man an ambition of the understanding, no
less than of the will, especially in high and lofty spirits.

Of this kind we have among the Greeks a striking example in 34
Pythagoras, though he united with it a coarser and more cumbrous
superstition; another in Plato and his school,⁴¹ more dangerous and
subtle. It shows itself likewise in parts of other philosophies, in the
introduction of abstract forms and final causes and first causes, with the
omission in most cases of causes intermediate, and the like. Upon this
point the greatest caution should be used. For nothing is so mischiev-
ous as the apotheosis of error; and it is a very plague of the under-
standing for vanity to become the object of veneration. Yet in this van-
ity some of the moderns have with extreme levity indulged so far as to
attempt to found a system of natural philosophy on the first chapter of
Genesis, on the book of Job, and other parts of the sacred writings;
seeking for the dead among the living; which also makes the inhibition
and repression of it the more important, because from this unwhole-
some mixture of things human and divine there arises not only a fan-
tastic philosophy but also an heretical religion. Very meet it is therefore
that we be sober-minded, and give to faith that only which is faith's. . . .

So much concerning the several classes of Idols, and their 35
equipage: all of which must be renounced and put away with a fixed
and solemn determination, and the understanding thoroughly freed
and cleansed; the entrance into the kingdom of man, founded on
the sciences, being not much other than the entrance into the king-
dom of heaven, whereunto none may enter except as a little child.

³⁶ **rational school of philosophers** Platonists who felt that human reason alone could discover the truth and that experiment was unnecessary. Their observation of experience produced only a "variety of common instances" from which they reasoned.

³⁷ **another class of philosophers** William Gilbert (1544–1603) experimented tirelessly with magnetism, from which he derived numerous odd theories. Though Gilbert was a true scientist, Bacon thought of him as limited and on the wrong track.

³⁸ **a third class** Pythagoras (580?–500? B.C.) was a Greek philosopher who experimented rigorously with mathematics and a tuned string. He is said to have developed the musical scale. His theory of reincarnation, or the transmigration of souls, was somehow based on his travels in India and his work with scales. The superstitious belief in the movement of souls is what Bacon complains of.

³⁹ **genii** Oriental demons or spirits; a slap at Pythagoras, who traveled in the Orient.