On Chancellor Bacon

Not long ago, in a company of well-known persons, the worn-out and frivolous old question was discussed as to who was the greatest man: Caesar, Alexander, Tamerlane, Cromwell, etc.

Someone replied that unquestionably it was Isaac Newton. The man was right; for if true greatness consists in having received a powerful genius from Heaven and in having used it to enlighten oneself and others, such a man as Mr. Newton, the like of whom is not seen in ten centuries, is truly the great man; and these politicians and conquerors, in whom no century has been wanting, are as a rule no more than eminent bad men. It is to him who holds sway over men's minds by force of truth, not to those who make slaves by violent means: it is to him who knows the universe, not to those who disfigure it, that we owe our esteem.

Since you have demanded that I speak about the famous men that England has produced, I must begin with the Bacons, Lockes, Newtons, etc. The generals and ministers will come along in their turn.

I should begin with the famous Lord Verulam, known in Europe under the name of Bacon, which was his family name. He was son of a Keeper of the Seals; and was for a long time Chancellor under King James I. Yet in the midst of court intrigues and the business of his high office, which themselves required a whole man, he found time

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to be a great philosopher, a good historian, and an elegant writer; and what is even more astonishing, he lived in a century in which the art of writing well was hardly known, and sound philosophy even less so. As is the way of the world, he was more highly valued after his death than during his lifetime: his enemies were courtiers in London; his admirers were found throughout Europe.

When Marquis d’Effiat accompanied to England Princess Marie, the daughter of Henry the Great who was to marry the Prince of Wales, that minister went to visit Bacon, who, being then ill in bed, received him with the curtains closed. “You are like the angels,” said d’Effiat to him; “we are always hearing about them, we believe them quite superior to men, and we never have the consolation of seeing them.”

You know, sir, how Bacon was accused of a crime which is hardly that of a philosopher—of having allowed himself to be corrupted by money. You know how he was sentenced by the House of Lords to pay a fine of about 400,000 livres in our money,¹ and to lose his station as Chancellor and as peer.

Today the English revere his memory to the point that they do not like to admit that he was guilty. If you ask me what I think, in order to answer you I will help myself to a fine thing I heard Lord Bolingbroke say. They were speaking in his -presence of the avarice of which the Duke of Marlborough had been accused, and were citing instances for which they appealed to the testimony of Lord Bohingbroke, who, having been his declared enemy, might perhaps with propriety reveal the facts. “He was so great a man,” replied Bohingbroke, “that I have forgotten his vices.”

I shall confine myself, then, to speaking to you about what has earned Chancellor Bacon the esteem of Europe.

The most unusual and the best of his works is that which is today the least read and the most useless; I have in mind his . *Novum scientiarum organum*. This is the scaffolding by which the new philosophy has been built; and when that edifice had been erected at least in part, the scaffolding was no longer of any use.

Chancellor Bacon was not yet familiar with nature, but he knew and pointed out
all the paths that leach to her. He had early despised what the universities called Philosophy, and he did all that was in his power to prevent these corporations, founded for the perfecting of human reason, from continuing to ruin it with their *quiddities*, their *abhorrance of a vacuum*, their *substantial forms*, and all the impertinent words that ignorance first made respectable, and that a ridiculous mixture with religion had rendered almost sacred.

He is the father of experimental philosophy. It is quite true that some wonderful discoveries had been made before his day. The mariner’s compass had been invented; so had printing, engraving, oil painting, looking glasses; the art of restoring, to some extent, the sight of old people by glasses called spectacles; gunpowder, etc. A new world had been sought, found, and conquered. Who would not suppose that these sublime discoveries had been made by the greatest of philosophers, and in ages much more enlightened than our own? Not at all: it was in an age of the most stupid barbarism that these great changes were made on the earth. Chance alone produced almost all these inventions, and it is even very probable that what we call chance played a large part in the discovery of America. At least we have always, believed that Christopher Columbus undertook his voyage solely on the faith of a naval captain whom a storm had driven into the latitude of the Caribbean islands.

At any rate, men knew how to go to the ends of the earth, they knew how to destroy towns with an artificial thunderbolt more terrible than the natural one; but they were not acquainted with the circulation of the blood, the weight of air, the laws of motion, the nature of light, the number of our planets, and so on; and a man who upheld a thesis on the categories of Aristotle, on the universal *à parte rei*, or some other such piece of nonsense, was regarded as a prodigy.

The most astonishing and most useful inventions are not those that do the most honor to the human mind.

It is to a mechanical bent, natural to most men, that we owe all the arts; we do not owe them to sound philosophy. The discovery of fire, the art of making bread, of
smelting and working metals, of building houses, the invention of the weaver’s shuttle, are of an entirely different order of necessity from printing and the mariner’s compass; nevertheless, these arts were devised by men who were still savages.

Later on, what prodigious use the Greeks and the Romans made of mechanics: And yet in their day it was believed that the skies were of crystal, and that the stars were little lamps that sometimes fell into the sea; and one of their great philosophers, after much study, found that the heavenly bodies were pebbles that had broken away from the earth.  

In a word, nobody before Chancellor Bacon had understood experimental philosophy; and of all the physical experiments that have been made since his time, hardly one was not suggested in his book. Several of them he had made himself. He constructed pneumatic machines of some sort, by means of which he discovered the elasticity of the air; be went all around the discovery of its weight, he even grazed it, but Torricelli it was who seized upon that truth. Shortly afterward, experimental physics suddenly began to be cultivated in almost all parts of Europe at once. It was a hidden treasure of which Bacon had some expectations, and which all the philosophers, encouraged by his promise, labored to unearth.

But what has surprised me most has been to find in explicit terms in his book that novel theory of attraction which Mr. Newton is credited with inventing.

“We must try to discover,” says Bacon, “whether there is not some kind of magnetic power which operates between the earth and heavy bodies, between the moon and the ocean, between the planets,” etc.

In another place he says:

It must be either that heavy bodies tend by their nature toward the center of the earth or else that they are mutually attracted by it; and, in this latter case, it is ‘evident that the
closer falling bodies approach to the earth, the more forcibly they are drawn to it.

He continues:

We ought to find by experiment whether the same clock moved by weights will go faster on the top of a mountain or at the bottom of a mine. If the force of the weights diminishes on the mountain and increases in the mine, then it is likely that the earth has a real power of attraction.4

This precursor in philosophy was also an elegant writer, a historian, a wit. His moral essays are highly regarded, but they were written to instruct rather than to please; and being neither a satire on human nature like the maxims of M. die La Rochefoucauldi, nor a school for skepticism like Montaigne, they are less read than these two ingenious books.

His History of Henty VII has been considered a masterpiece; but I should be much mistaken if it deserved to be compared with the work of our excellent die Thou.

Discussing that famous impostor Perkin, a Jew by birth, who, encouraged by the Duchess of Burgundy, so boldly took the name of Richard IV, King of England, and disputed the crown with Henry VII, here is how Chancellor Bacon expresses himself:

At this time the King began again to be haunted with sprites; by the magic and curious arts of the Lady Margaret; who raised up the ghost of Richard Duke of York.

- to walk and vex the King.

After such time as she thought he [Perkin] was perfect in his lesson, she began
to cast with herself from what coast this blazing star should first appear, and at what
time. It must be upon the horizon of Ireland; for there had the like meteor strong
influence before."

It seems to me that our sensible de Thou does not indulge in this fustian, which
in the old days was taken for the sublime, but which we now rightly call galimatias.

Letter Fourteen: On Descartes and Newton

A Frenchman arriving in London finds quite a change, in philosophy as in all else.
Behind him he left the world full; here he finds it empty. In Paris one sees the universe
composed of vortices of subtile matter; in London one sees nothing of the sort. With us,
it’s the pressure of the moon that causes the rising of the tide; with the English, it’s the
sea gravitating toward the moon; so that when you think the moon ought to give us high
tide, these gentlemen think it ought to be low; none of which unfortunately can be
verified, for in order to know the truth of it we should have had to examine the moon and
the tides at the first moment of creation.

You will also notice that the sun, which in France has nothing to do with the
business, over here contributes his twenty-five per cent or so. According to your
Cartesians, everything is done by means of an impulse that is practically
incomprehensible; according to Mr. Newton it is by a kind of attraction, the reason for
which is no better known. In Paris you picture the earth as shaped hike a melon; in
London it is flattened on both sidles. Light, [or a Cartesian, exists in the air; for a
Newtonian it comes here from the sun in six and a half minutes. All the operations of
your chemistry are owing to acids, alkalis, and subtile matter; in England, the concept of
attraction dominates even iii this.

The very essence of things is totally different. You agree neither on the definition
of soul nor on that of matter. Descartes assures us that soul is the same thing as
thought, and Locke pretty well demonstrates the contrary.

Descartes declares, again, that matter is nothing but extension; to that, Newton
adds solidity. Here are sonic tremendous contrarieties.

Non nostrum inter vos tantas componere lites.¹

This famous Newton, this destroyer of the Cartesian system, died in March of last year, 1727. In life he was honored by his countrymen, and he was buried like a king who had benefited his subjects.

The eulogy on Mr. Newton that was delivered by M. de Fontenelle before the Academie des Sciences has been read with eagerness, and has been translated into English. In England people looked forward to the opinion of M. de Fontenelle, expecting a solemn declaration of the superiority of English philosophy, but when they found him comparing Descartes to Newton, the whole Royal Society of London was aroused. Far from acquiescing in such a judgment, they found a good deal of fault with the discourse. Several even (and those by no means the most philosophical) were shocked at the comparison for the sole reason that Descartes was a Frenchman.

It must be confessed that these two great men were remarkably unlike in their way of life, in their fortune, and in their philosophy.

Descartes was born with a lively and strong imagination which made e of him a man as extraordinary in his private life as in his thinking. That imagination could not be concealed even in his philosophical works, where at every moment one is struck by ingenious and sparkling comparisons. Nature had almost made him a poet, and as a matter of fact he did compose for the Queen of Sweden an entertainment in verse which, for the honor of his memory, has not been printed.

He tried the profession of arms for a while, and afterward, having become a philosopher altogether, thought it not unworthy of himself to have a love affair. He had by his mistress a daughter named Francine, who died young, and whose loss he deeply mourned. And so he experienced all that belongs to the human lot.

For a long time lie believed that in order to philosophize . freely lie would have to escape from society, and especially from his native country. He was right; the men of
his time knew too little to help him clarify his ideas, and were in fact capable of little more than doing him harm.

He left France because lie followed after truth, which was persecuted there in those (hays by the miserable philosophy of scholasticism; but he found no snore rationality in the universities of Holland, to which he retired. For while the sole propositions of his philosophy that were true were condemned in France, he was also persecuted by the pretended philosophers of Holland, who understood him no better, and who, having a nearer view of his glory, hated him personally even more. He was obliged to leave Utrecht. He had to undergo the accusation of atheism, the last resource of calumniators; he who had employed all his intellectual sagacity in a search for new proofs of the existence of a God was suspected of believing in none.

Such a deal of persecution presumes very great merit and a brilliant reputation; both were his. Reason even began to gleam a little in the world, piercing through the darkness of scholasticism and the prejudices of popular superstition. At last his name became so famous that there was some effort to attract him to France with the promise of rewards. A pension of a thousand dens was offered him. He came back with that expectation, paid the expenses of the patent (which was sold in those days), failed to receive the pension, and returned to philosophize in his North Holland solitude at the same time as the great Galileo, at the age of eighty, groaned in the prisons of the Inquisition for having proved the motion of the earth. In the end he (lied in Stockholm, prematurely, of a had regimen, in the presence of a number of learned men, his enemies, and in tile hands of a physician who loathed him.

The career of Sir Isaac Newton was altogether different, he lived for eighty-five years, always tranquil and happy, and held in honor in his own country. it was his great good fortune to have been born not only inn a free country but in a time when, the irrelevancies of scholasticism being banished, reason alone was cultivated; and the world must needs be his pupil, not his enemy.

One curious difference between him and Descartes is that in the course of so
long an life he was free from both passion and weakness. He never had intimacies with a woman; this was confirmed to me by the doctor and the surgeon in whose arms he died. One may admire Newton for it, but one should not blame Descartes.

According to public opinion in England, of these two philosophers the first was a dreamer and the other a sage.

Few people in London read Descartes, whose works, in effect, have lost their utility; hardly any read Newton either, for it takes considerable knowledge to understand him. Nevertheless, everybody talks about them, granting nothing to the Frenchman and everything to the Englishman Some folk believe that if we are no longer satisfied with the abhorrence of vacuums, if we know that air has weight, if we use telescopes, we owe it all to Newton. Over here he is the Hercules of fable, to whom the ignorant attributed all the deeds of the other heroes.

In a criticism made in London of M. Fontenelle’s discourse, somebody went so far as to say that Descartes was not an great geometrician. Those who talk in this way may reproach themselves for beating their nurse. Descartes made as great progress, from the point at which he found geometry to the point to which he carried it, as Newton did after him. He was the first who found the way to give the algebraic equations of curves. His geometry, which thanks to him has by now become a commonplace, was in his time so profound that no professor dared undertake to explain it, and no one in Holland understood it but Schooten, and no one in France but Fermat.

He carried the same spirit of geometry and inventiveness over into dioptrics, which in his hands became a new art entirely; and if here or there he made a mistake, it is clear that a man who discovers new lands cannot suddenly know all there is to know about them. Those who come after him and make those lands bear fruit at least owe their discovery to him. He will not deny that all the other works of M. Descartes swarm with errors.

Geometry was a guide that, in a way, he himself had created . and that would have conducted him safely through physics; he abandoned that guide in the end,
however, and gave himself up to the systematizing spirit. From then on, his philosophy was no more than an ingenious romance,² at best seeming probable to the ignorant. He erred on the nature of the soul, on the proofs of the existence of God, on the subject of matter, on the laws of motion, on the nature of light. He admitted innate ideas, lie invented new elements, he created a world, he made man according to his own fashion—in famed, it is rightly said that man according to Descartes is Descartes’ man, far removed from man as he actually is.

He carried his errors in metaphysics so far as to assert that two and two make four only because God has willed it so. But it is not too much to say that he was admirable even in his aberrations. When he was wrong, at least he was systematically wrong, and with logical coherence. He got rid of the absurd chimeras with which we had infatuated our youth for two thousand years. He taught the men-n of his time how to reason, and how to fight him with his own weapons. If lie has not paid in sterling, it is certainly something to have decried the counterfeit.

I do not think one can truly compare his philosophy in any way with that of Newton: the first is an experimental sketch, the second a finished masterpiece. But he who has set us on the road to truth is perhaps as worthy as’ he who since then has gone on to the end of it.

Descartes gave sight to the blind; they saw the faults of antiquity and their own as well. The course he opened to us has since become boundless. The little book of Rohaut offered us for a while a complete system of physics; today, the collected works of all the academies of Europe do not amount even to the beginnings of a system. On going deep down into., that abyss, we found it infinite.

Now we shall see what Mr. Newton dug out of it.