

THE GREAT INSTAURATION OF FRANCIS OF VERULAM: PREFACE

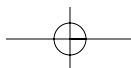
FRANCIS BACON

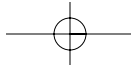
FRANCIS OF VERULAM

reasoning thus with himself came to this conclusion that the knowledge of his thoughts would be of advantage to present and future generations.

Believing that the human understanding creates difficulties for itself, and does not put to sober and sensible use the true means of help that are in man's power; from which manifold ignorance of things has come, and from that ignorance numberless ills; he thought that every effort should be made, by whatever means, to restore to its original condition, or at least to improve, that commerce between *Mind* and *Things* (to which almost nothing on earth, or at least nothing that is of the earth, can compare). But there was never any hope at all that the errors that have flourished, and will for ever flourish, would (if the mind were left to go its own way) correct themselves one after the other, either by the natural force of the understanding or through the aids and instruments of dialectic. This is because the primary notions of things, which the mind readily and passively drinks in, lays up and accumulates (and from which all the rest flow) are defective and confused and carelessly abstracted from things; nor are the secondary and other notions any less arbitrary and unreliable. As a result, that entire human reasoning that we apply in the investigation of Nature is poorly put together and constructed, but is like some magnificent great pile without any foundation. For while men admire and extol the false powers of the mind, they pass by and abandon those that could be its true powers, were it given the proper assistance, and were the mind itself to wait on things instead of vainly trying to lord it over them. There was thus but one course left, namely to try the whole matter afresh with better means of support, and to bring about a complete *Instauration* of the arts and sciences and all the learning of mankind, raised upon proper foundations. And while at the beginning this might appear infinite and beyond mortal capacity, once in train it will be found reasonable and sober, more so in fact than those things that have been done hitherto. For this matter has an end, whereas the affairs of science as they are now handled are a kind of giddy whirl, and perpetual motion in a circle. And while he well knew what a solitary undertaking this might be, and how hard it would be to bring it to credit and belief, nonetheless he did not think to desert either the task or himself, but resolved to enter on and explore that path that alone is open to the human mind. For it is better to make a beginning in a matter which can have an end, than to be involved in perpetual argument and striving in matters which have no end. And the paths of contemplation fairly resemble those celebrated paths of action, in that one, steep and difficult at first, ends in open country, while the other, at first sight easy and straightforward, leads to places trackless and precipitous.

Moreover, since he was unsure how soon these things would occur to anyone else, bearing in mind especially that he has so far found no one who has applied his mind to the same thoughts,





he decided to publish at once as much as he has been able to complete. And this haste came not from ambition, but from anxiety for his work; that in the event of his death there should yet survive some indication or design of what he conceived; and that there should at the same time survive some sign of his sincere concern for the good of mankind. He certainly held any other ambition to be of less worth than that which he had in hand, seeing that the matter in question is either nothing, or is so great as to be content with its own merit, without seeking any further reward.

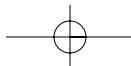
TO OUR MOST SERENE AND MIGHTY PRINCE AND LORD, JAMES

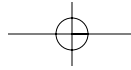
*by the Grace of God, King of Great Britain, France and Ireland, Defender of the Faith, Etc.
Most Serene and Mighty King,*

Your Majesty could perhaps accuse me of theft for stealing so much time from your affairs as was needed for this work. I can offer no defense, for time can never be restored, unless the time taken from your business could perhaps be laid to the memory of your name and the honour of your age; if indeed these thoughts are of any value. They are certainly quite new, entirely new in kind, but taken from a very ancient model, namely, from the world itself, and from the nature of things and of the mind. To speak the truth, I myself like to consider this work of a child of time rather than of intelligence, and the only surprising thing is that the first idea of the matter, and such great suspicions about established opinions, could have entered anyone's mind. The rest follows without difficulty. But no doubt there is an element of chance (as we say) and luck in what men think, no less than in what they do and say. And I wish this chance of which I speak to be so understood, that whatever good there is in what I offer may be ascribed to God's infinite mercy and goodness and to the felicity of your times; and that, as I have been a most honest and affectionate servant in my life, so after my death I may have the fortune to ensure, by lighting this new torch in the dark shades of philosophy, that this age will shine forth yet more gloriously to posterity. And surely it is to the times of the wisest and most learned of kings that the *Regeneration* and *Instauration* of the sciences rightly belongs. Lastly, I have a petition, one not unworthy of Your Majesty, and one that very greatly concerns this my work. It is that you, who can compare with Solomon in so many things, in the gravity of your judgements, in the peace of your reign, in largeness of heart, in the noble variety of the books you have composed, would further follow his example and make it your care that a natural and experimental history be collected and completed, true and rigorous, free of anything philological,¹ such as philosophy may be built upon and such as I shall in its due place describe, so that at length, after these many ages of the world, philosophy and the sciences may no longer hang insubstantial in the air, but rest on the solid foundations of well-weighed experience of every kind. I have provided the *Organon*, but the materials must be sought from things themselves. May God Almighty long preserve Your Majesty.

Your Most Serene Majesty's most bounden and devoted servant,

—FRANCIS VERULAM, CHANCELLOR.



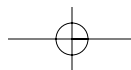


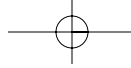
PREFACE

That the sciences are in an unhappy state, and have made no great progress; and that a path must be opened to man's understanding entirely different from that known to men before us, and other means of assistance provided, so that the mind can exercise its rightful authority over the nature of things.

Men seem to me to have a poor knowledge both of their resources and of their strengths, but in fact to overrate the one and underrate the other, with the result that they either put a senselessly high value on the arts they already possess, and do not seek to enlarge them, or else unfairly disparage themselves and spend their powers on trivial things, making no attempt at those things that bear on the heart of the matter. These [failings] are like pillars of fate² in the path of the sciences, since men have neither desire nor hope to encourage them to explore beyond. And since an assumption of wealth is among the greatest causes of poverty, and faith in things presently existing leads to neglect of true means of assistance for the future, it is useful, in fact absolutely necessary, that at the very threshold of my work I dispel the excessive fame and admiration accorded to those discoveries made hitherto (and that without any circumlocution and pretence), as a timely warning that men should not overestimate their number nor overpraise their value. For anyone looking carefully into all those different books that are the boast of the arts and sciences, will find throughout them numberless repetitions of the same things, all different in the ways they handle their subject but saying nothing new; so that while at first sight it all appears abundant, when looked at closely, it is found to be sparse. And as to their usefulness, it should be said frankly that that wisdom which we imbibed principally from the Greeks seems merely the boyhood of knowledge, with the characteristics of boys, that it is good at chattering, but immature and unable to generate. For it is fruitful of controversies, and barren of works. So much so, that the state of learning as it now is seems to agree to the life with the Scylla of fable, who had the head and features of a virgin, but was girt about the womb with a clinging pack of barking monsters. In the same way also, the sciences as we know them have charming and fair-seeming general features, but when it comes to details, down to the parts of generation as it were, where they should yield fruit and works, then arguments and barking disputations arise, and in these they terminate, and are all the issue they can yield.

Furthermore, if these sciences were not altogether defunct, what has been the case throughout the many ages now past could, it seems, hardly have come about, that they have stuck more or less motionless in their tracks and have made no advances worthy of mankind, often to the point where not only what was once asserted remains assertion still, but where also a question once raised remains a question still, not answered by discussion but fixed and fed thereby; while all the tradition and succession of schools represent only the characters of master and pupil, not of inventors or those who bring any distinction to things already invented. In the mechanical arts, on the other hand, we see the opposite happening, for they grow and become more perfect by the day, as if partaking of some breath of life; and in the hands of their first authors they often appear crude and somewhat clumsy and shapeless, yet in the course of time they take on new powers and usefulness, to such a degree that men's eager pursuit of them ceases and turns to other things before these arts shall have reached the summit of their perfection. By contrast,



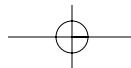


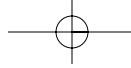
philosophy and the intellectual sciences stand like statues, worshipped and celebrated, but not moved forward. In fact they sometimes flourish most under their first authors, only to decline thereafter. For when men (like party politicians)³ have once surrendered their minds and have given their allegiance to the opinion of one man, they bring no enlargement to the sciences themselves, but merely act as servile functionaries and attendants to glorify certain authors.

And let no one say that the sciences have been gradually growing and have finally reached a certain secure position, and now at last (as if they had run their full course) have a settled home in the works of a few writers; that nothing better can be found hereafter, the only thing left being to embellish and cultivate the discoveries already made.

Indeed, it is certainly much to be wished that matters were so, but the real truth is that these enslavings of the sciences arise from nothing more than the impudence of a few and the sloth and inertia of the rest. For after the sciences had perhaps to some extent been carefully studied and handled, some fellow has then popped up, of bold mind and popular and celebrated for his neat method of summarizing knowledge, who has to all appearance arranged them as an art but in reality has spoiled the efforts of his predecessors. This, however, is what later generations like, because it makes their work easy, and saves the tedium and impatience involved in any new investigation. But if anyone is persuaded by this long-established consensus, as if it were the judgement of time, he should know that the argument on which he relies is most fallacious and unsafe. For we by no means know everything that has been brought to light and published in science and art in every different age and place, and far less what has been explored and worked on in private by individuals. Neither the births, therefore, nor the miscarriages of time have survived in our records. Nor is the consensus itself and the long time it has lasted worth much at all. For however political systems differ, there is only one such system of the sciences; it always has been and will remain democratic. Now as far as the people are concerned, the doctrines that most flourish are either contentious and pugnacious, or bland and empty, such, that is, as either ensnare assent or win it by flattery.⁴ And therefore the greatest minds in every age have doubtless felt their force; while being men of uncommon capacity and understanding they have nonetheless, with an eye to their popular reputation, submitted to the judgement of time and of the multitude; and as a result, any more exalted reflections that may have gleamed forth were straightway buffeted and extinguished by the winds of popular opinion. The result has been that Time, like a river, has brought down to us the light and inflated, while it has sunk the weighty and solid. In fact those same authors who set up a virtual dictatorship in the sciences and hold forth so confidently, when from time to time they come to themselves again, turn to complaints about the subtlety of Nature, the hidden recesses of truth, the obscurity of things, the tangled skein of causes and the weakness of the human intellect; not that that proves them any more modest, seeing that they would rather put the blame on the common condition of men and things than confess their own faults. In fact, quite often, when some art fails to attain its object, they declare on the strength of that same art that attainment is not possible. But an art cannot be condemned when it is itself judge and jury. That is therefore only said to save ignorance from ignominy.

Now the condition of the teachings handed down and accepted is, broadly speaking, that they are barren of works, but teeming with questions; late and slow in making any progress, giving an appearance of perfection in the whole, but half-hollow within; subject to the whim





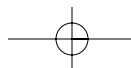
of popular opinion and doubted even by their authors, so that they are displayed to view hedged about with sundry artful devices. On the other hand, even those who have resolved to find things out for themselves and devote their efforts to extending the frontiers of knowledge have never ventured to tear themselves away entirely from received ideas and to seek the sources of things. Yet they think it a great achievement if they introduce and add anything of their own to the sum of knowledge, with the prudent thought that they gain a reputation for independence by the addition, and for modesty by their agreement with the rest. But so long as common opinion and custom have their say, these vaunted middle ways turn out to bring great harm to the sciences. For it is hardly possible at one and the same time to gaze with admiration upon authors and to excel them, knowledge being like water, which does not rise higher than the level from which it descended. Men of this sort therefore make a few changes but little progress; they bring some improvements, but not any great advance.

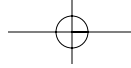
There have however been some bolder spirits who have taken the whole business upon themselves, and relying on the force of their intelligence, have beaten a path for themselves and their theories by overturning and destroying previous ones. But for all their commotion, there has been no great advance, since their aim has not been to enlarge the benefits and operations of philosophy and the arts but merely to exchange one doctrine for another and to assert their own rule over men's opinions. But little good has come of it, since although they are opposite errors, the causes of those errors are just the same.

And any who did not bind themselves either to other men's ideas or their own, but were inspired from a love of freedom to try to carry others with them in their search for truth, were well-meaning but ineffective in their attempt. For they seem to have followed only probable lines of thought and to have been carried around in a giddy whirl of arguments, and to have weakened the rigour of their investigation by the indiscriminate licence of their search. We find no one who has spent a proper time on things themselves and actual experience. And some again who have committed themselves to the waves of experience and almost become mechanics, nevertheless carry out a somewhat erratic investigation into that very experience and conduct their campaign in no systematic way. Moreover, most of them set themselves some trifling tasks, accounting it a great achievement if they were able to make just one discovery, a way of proceeding as slight as it is unskilful. For no one examines the nature of any matter correctly and successfully by looking at that matter alone; even after taking great pains in varying experiments, he does not find rest, but still finds something further to look for.

And there is another thing of first importance to be remembered, namely that all who have laboured in learning from experience have from the outset fixed upon certain definite works, which they pursued with immoderate and premature eagerness, and have sought, as I say, fruit-bearing, not light-bearing, experiments. They have not followed the example of the order in which God on the first day created light alone and devoted a whole day to that. Nor on that day did He bring forth any material work, but descended to those things in the days that followed.

And those who gave the first place to dialectic, and who believed that therein lay the most reliable aids to the sciences, have in very truth seen most clearly that human understanding left to itself is deservedly not to be trusted. But then the remedy is altogether too feeble for the disease; more than that, it is not free from disease itself. For the received dialectic, while quite correctly applied to civil affairs and those arts that are based on discourse and opinion,





falls a long way short of the subtlety of Nature; and clutching at what it cannot hold does more to consolidate errors than to open the road to the truth.

To sum up, then, it does not seem that either trust in others or their own efforts in the sciences have succeeded in bringing light to men up to now, especially since neither the demonstrations nor the experiments known so far have been of much assistance. Rather, the great edifice of this world appears to the eye of human understanding to be labyrinthine in its structure, displaying on every hand such ambiguous paths, such deceitful likenesses and signs of things, such oblique and convoluted coils and knots of natures. And our journey has always to be made by the uncertain light of the sense, now shining forth, now hidden, through the forests of experience and particulars. And furthermore, as I have said, those who put themselves forward as guides for our journey are themselves also entangled and add to the number of errors and wanderers. In such a difficult pass there is no hope to be had from human judgement acting by its own power alone, nor from some lucky turn of chance. For no excellence of wit, however great, nor repeated throws of the dice of experiment can overcome these obstacles. Our steps must be guided by a thread, and the whole way from the very first perceptions of the senses must be laid down on a sure plan. Not that my remarks should be taken to imply that nothing at all has been achieved by the great labours of so many years; nor should we be ashamed of the discoveries made in the past. It is true that so far as intelligence and abstract thought are concerned, the ancients proved themselves remarkable men. But just as in earlier times, when sailors set their course by observations of the stars alone, they could, to be sure, skirt the coasts of the old continent or cross some lesser and inland seas; but before the ocean could be crossed and the regions of the new world discovered, the use of the mariner's compass had to become known as a more dependable and certain guide along the journey. In exactly the same way the discoveries made hitherto in the arts and sciences have been such as could be found by practice, reflection, observation and argument, being those that are nearer the senses and underlie common notions; but before we can reach the more remote and hidden parts of Nature, it is essential to introduce a better and more perfect method of using the human mind and understanding.

NOTES

1. A *philologus* was a man of letters and, in particular, an interpreter of the writings of others. As Bacon explains in Aphorism 3 of *Aphorisms on the Composition of the Primary History*, which is printed at the end of this volume, he was keen to exclude from such histories appeals to the authority of ancient authors.
2. The pillars of fate, or of Hercules, are the pillars between which the ship of human reason in the frontispiece is attempting to steer a passage. Hercules' pillars were the two rocks on either side of the Straits of Gibraltar.
3. Bacon uses the term *pedarii senatores*. Pedarians were said (though this is contested) to have been senators of an inferior grade, who had no vote of their own but could merely signify their assent to that of another.
4. The doctrines that ensnare assent and mislead it by flattery are those of the Idols of the Theatre; they are exemplified by Aristotle's philosophy and by those natural sciences which try to incorporate elements of theology. As Bacon explains more clearly in Aphorisms I, 65 and 67, it was the pugnacious dogmatism of these teachings which trapped their admirers.

