NOTE ON THE TRANSLATION

The translation is based on the original French version (1637) of the *Discourse on Method* found in volume six of the Adam and Tannery edition of Descartes' works (Paris: Vrin, 1965). The numbers in the margins of this translation refer to the pagination of the Adam and Tannery edition.

D.A.C.

DISCOURSE ON THE METHOD FOR CONDUCTING ONE'S REASON WELL AND FOR SEEKING THE TRUTH IN THE SCIENCES

If this discourse seems too long to be read at one time, it may be divided into six parts. In the first part, you will find various considerations concerning the sciences; in the second part, the chief rules of the method which the author has sought; in the third part, some of the rules of morality which he has derived from this method; in the fourth part, the arguments by which he proves the existence of God and of the human soul, which are the foundations of his metaphysics; in the fifth part, the order of the questions in physics that he has investigated, and particularly the explanation of the movement of the heart and of other difficulties that pertain to medicine, as well as the difference between our soul and that of beasts; and in the final part, what things the author believes are required in order to advance further in the investigation of nature than the author has done, and what reasons have made him write.

PART ONE

Good sense is the best distributed thing in the world, for everyone thinks himself to be so well endowed with it that even those who are the most 2
difficult to please in everything else are not at all wont to desire more of it than they have. It is not likely that everyone is mistaken in this. Rather, it provides evidence that the power of judging well and of distinguishing the true from the false (which is, properly speaking, what people call "good sense" or "reason") is naturally equal in all men, and that the diversity of our opinions does not arise from the fact that some people are more reasonable than others, but solely from the fact that we lead our thoughts along different paths and do not take the same things into consideration. For it is not enough to have a good mind; the main thing is to apply it well. The greatest souls are capable of the greatest vices as

well as of the greatest virtues. And those who proceed only very slowly can make much greater progress, provided they always follow the right path, than do those who hurry and stray from it.

For myself, I have never presumed that my mind was in any respect more perfect than that of ordinary men. In fact, I have often desired to have as quick a wit, or as keen and distinct an imagination, or as full and responsive a memory as some other people. And other than these I know of no qualities that serve in the perfecting of the mind, for as to reason or sense, inasmuch as it alone makes us men and distinguishes us from the beasts, I prefer to believe that it exists whole and entire in each of us, and in this to follow the opinion commonly held by the philosophers,
3 who say that there are differences of degree only between accidents, but not at all between forms or natures of individuals of the same species.

But I shall have no fear of saying that I think I have been rather fortunate to have, since my youth, found myself on certain paths that have led me to considerations and maxims from which I have formed a method by which, it seems to me, I have the means to increase my knowledge by degrees and to raise it little by little to the highest point which the mediocrity of my mind and the short duration of my life will be able to allow it to attain. For I have already reaped from it such a harvest that, although I try, in judgments I make of myself, always to lean more on the side of diffidence than of presumption, and although, looking with a philosopher's eye at the various actions and enterprises of all men, there is hardly one of them that does not seem to me vain and useless, I cannot but take immense satisfaction in the progress that I think I have already made in the search for truth, and I cannot but envisage such hopes for the future that if, among the occupations of men purely as men, there is one that is solidly good and important, I dare to believe that it is the one I have chosen.

All the same, it could be that I am mistaken, and what I take for gold and diamonds is perhaps nothing but a bit of copper and glass. I know how much we are prone to err in what affects us, and also how much the judgments made by our friends should be distrusted when these judgments
4 are in our favor. But I will be very happy to show in this discourse what paths I have followed and to represent my life in it as if in a picture, so that everyone may judge it for himself; and thus, that, learning from the common response the opinions one will have of it, this may be a new means of teaching myself, which I shall add to those that I am accustomed to using.

Thus my purpose here is not to teach the method that everyone ought to follow in order to conduct his reason well, but merely to show how I have tried to conduct my own. Those who take it upon themselves to

give precepts must regard themselves as more competent than those to whom they give them; and if they are found wanting in the least detail, they are to blame. But putting forward this essay merely as a story or, if you prefer, as a fable in which, among some examples one can imitate, one will perhaps also find many others which one will have reason not to follow, I hope that it will be useful to some without being harmful to anyone, and that everyone will be grateful to me for my frankness.

I have been nourished on letters since my childhood, and because I was convinced that by means of them one could acquire a clear and assured knowledge of everything that is useful in life, I had a tremendous desire to master them. But as soon as I had completed this entire course of study, at the end of which one is ordinarily received into the ranks of the learned, I completely changed my mind. For I found myself confounded by so many doubts and errors that it seemed to me that I had not gained any profit from my attempt to teach myself, except that more and more I had discovered my ignorance. And yet I was at one of the most renowned 5
schools of Europe, where I thought there must be learned men, if in fact any such men existed anywhere on earth. There I had learned everything the others were learning; and, not content with the disciplines we were taught there, I had gone through all the books I could lay my hands on that treated those disciplines considered the most curious and most unusual. Moreover, I knew what judgments the others were making about me; and I did not at all see that I was rated inferior to my fellow students, even though there already were some among them who were destined to take the place of our teachers. And finally our age seemed to me to be just as flourishing and as fertile in good minds as any of the preceding ones. This made me feel free to judge all others by myself, and to think that there was no doctrine in the world that was of the sort that I had previously been led to hope for.

I did not, however, cease to hold in high regard the academic exercises with which we occupy ourselves in the schools. I knew that the languages learned there are necessary for the understanding of classical texts; that the charm of fables awakens the mind; that the memorable deeds recounted in histories uplift it, and, if read with discretion, aid in forming one's judgment; that the reading of all good books is like a conversation with the most honorable people of past ages, who were their authors, indeed, even like a set conversation in which they reveal to us only the best of their thoughts; that oratory has incomparable power and beauty; that poetry has quite ravishing delicacy and sweetness; that mathematics has 6
some very subtle stratagems that can serve as much to satisfy the curious as to facilitate all the arts and to lessen men's labor; that writings dealing with morals contain many lessons and many exhortations to virtue that

are very useful; that theology teaches one how to reach heaven; that philosophy provides the means of speaking plausibly about all things and of making oneself admired by the less learned; that jurisprudence, medicine, and the other sciences bring honors and riches to those who cultivate them; and, finally, that it is good to have examined all these disciplines, even the most superstition-ridden and the most false of them, in order to know their true worth and to guard against being deceived by them.

But I believed I had already given enough time to languages, and also to the reading of classical texts, both to their histories and to their fables. For conversing with those of other ages is about the same thing as traveling. It is good to know something of the customs of various peoples, so as to judge our own more soundly and so as not to think that everything that is contrary to our ways is ridiculous and against reason, as those who have seen nothing have a habit of doing. But when one takes too much time traveling, one eventually becomes a stranger in one's own country; and when one is too curious about what commonly took place in past ages, one usually remains quite ignorant of what is taking place in one's
7 own country. Moreover, fables make one imagine many events to be possible which are not so at all. And even the most accurate histories, if they neither alter nor exaggerate the significance of things in order to render them more worthy of being read, almost always at least omit the baser and less noteworthy details. Consequently the rest do not appear as they really are, and those who govern their own conduct by means of examples drawn from these texts are liable to fall into the extravagances of the knights of our romances and to conceive plans that are beyond their powers.

I held oratory in high regard and was enamored of poetry, but I thought both were gifts of the mind, rather than fruits of study. Those who possess the strongest reasoning and who best order their thoughts in order to make them clear and intelligible can always best persuade others of what they are proposing, even if they were to speak only Low Breton[1] and had never learned rhetoric. And those who have the most pleasing rhetorical devices and who know how to express themselves with the most embellishment and sweetness would not fail to be the greatest poets, even if the art of poetry were unknown to them.

I delighted most of all in mathematics because of the certainty and the evidence of its reasonings. But I did not yet notice its true use, and, thinking that it was of service merely to the mechanical arts, I was astonished by the fact that no one had built anything more noble upon its foundations,

1. This dialect was considered rather barbarous and hardly suitable for sophisticated literary endeavors.

given that they were so solid and firm. On the other hand, I compared the writings of the ancient pagans that deal with morals to very proud and very magnificent palaces that were built on nothing but sand and 8
mud. They place virtues on a high plateau and make them appear to be valued more than anything else in the world, but they do not sufficiently instruct us about how to recognize them; and often what they call by so fine-sounding a name is nothing more than a kind of insensibility, pride, desperation, or parricide.

I revered our theology, and I desired as much as anyone else to reach heaven; but having learned as something very certain that the road to heaven is open no less to the most ignorant than to the most learned, and that the revealed truths guiding us there are beyond our understanding, I would not have dared to submit them to the frailty of my reasonings. And I thought that, in order to undertake an examination of these truths and to succeed in doing so, it would be necessary to have some extraordinary assistance from heaven and to be more than a man.

Concerning philosophy I shall say only that, seeing that it has been cultivated for many centuries by the most excellent minds that have ever lived and that, nevertheless, there still is nothing in it about which there is not some dispute, and consequently nothing that is not doubtful, I was not at all so presumptuous as to hope to fare any better there than the others; and that, considering how many opinions there can be about the very same matter that are held by learned people without there ever being the possibility of more than one opinion being true, I deemed everything that was merely probable to be well-nigh false.

Then, as for the other sciences, I judged that, insofar as they borrow their principles from philosophy, one could not have built anything solid 9
upon such unstable foundations. And neither the honor nor the monetary gain they promised was sufficient to induce me to master them, for I did not perceive myself, thank God, to be in a condition that obliged me to make a career out of science in order to enhance my fortune. And although I did not make a point of rejecting glory after the manner of a Cynic, nevertheless I placed very little value on the glory that I could not hope to acquire except through false pretenses. And finally, as to the false doctrines, I thought I already knew well enough what they were worth, so as not to be liable to be deceived either by the promises of an alchemist, the predictions of an astrologer, the tricks of a magician, or the ruses or boasts of any of those who profess to know more than they do.

That is why, as soon as age permitted me to emerge from the supervision of my teachers, I completely abandoned the study of letters. And resolving to search for no knowledge other than what could be found within myself, or else in the great book of the world, I spent the rest of my youth

traveling, seeing courts and armies, mingling with people of diverse temperaments and circumstances, gathering various experiences, testing myself in the encounters that fortune offered me, and everywhere engaging in such reflection upon the things that presented themselves that I was able to derive some profit from them. For it seemed to me that I could find much more truth in the reasonings that each person makes concerning
10 matters that are important to him, and whose outcome ought to cost him dearly later on if he has judged badly, than in those reasonings engaged in by a man of letters in his study, which touch on speculations that produce no effect and are of no other consequence to him except perhaps that, the more they are removed from common sense, the more pride he will take in them, for he will have to employ that much more wit and ingenuity in attempting to render them plausible. And I have always had an especially great desire to learn to distinguish the true from the false, in order to see my way clearly in my actions, and to go forward with confidence in this life.

It is true that, so long as I merely considered the customs of other men, I found hardly anything there about which to be confident, and that I noticed there was about as much diversity as I had previously found among the opinions of philosophers. Thus the greatest profit I derived from this was that, on seeing many things that, although they seem to us very extravagant and ridiculous, do not cease to be commonly accepted and approved among other great peoples, I learned not to believe anything too firmly of which I had been persuaded only by example and custom; and thus I little by little freed myself from many errors that can darken our natural light and render us less able to listen to reason. But after I had spent some years thus studying in the book of the world and in trying to gain some experience, I resolved one day to study within myself too and to spend all the powers of my mind in choosing the paths that I
11 should follow. In this I had much more success, it seems to me, than had I never left either my country or my books.

Part Two

I was then in Germany, where the occasion of the wars which are not yet over there[2] had called me; and as I was returning to the army from the coronation of the emperor, the onset of winter detained me in quarters where, finding no conversation to divert me and fortunately having no worries or passions to trouble me, I remained for an entire day shut up

2. The Thirty Years' War (1618–48).

by myself in a stove-heated room,[3] where I was completely free to converse with myself about my thoughts. Among them, one of the first was that it occurred to me to consider that there is often not so much perfection in works composed of many pieces and made by the hands of various master craftsmen as there is in those works on which but a single individual has worked. Thus one sees that buildings undertaken and completed by a single architect are usually more attractive and better ordered than those which many architects have tried to patch up by using old walls that had been built for other purposes. Thus those ancient cities that were once mere villages and in the course of time have become large towns are usually so poorly laid out, compared to those well-ordered places that an engineer traces out on a vacant plain as it suits his fancy, that even though, upon considering each building one by one in the former sort, one often finds as much, if not more, art than one finds in those of the latter sort, still, upon seeing how the buildings are arranged—here a large one, there a small one—and how they make the streets crooked and uneven, one 12
would say that it is chance rather than the will of some men using reason that has arranged them thus. And if one considers that there have nevertheless always been officials responsible for seeing that private buildings contribute to the attractiveness of public areas, one will well understand that it is difficult to make things that are very finely crafted by laboring only on the works of others. Thus I imagined that peoples who, having once been half savages and having been civilized only little by little, have made their laws only to the extent that the inconvenience due to crimes and quarrels have forced them to do so, could not be as well ordered as those who, from the very beginning of their coming together, have followed the fundamental precepts of some prudent legislator. Likewise, it is quite certain that the state of the true religion, whose ordinances were made by God alone, must be incomparably better ordered than all the others. And, speaking of things human, I believe that if Sparta was at one time very flourishing, this was not because of the goodness of each one of its laws taken by itself, seeing that many of them were very strange and even contrary to good morals, but because, having been devised by a single individual, they all tended toward the same end. And thus I thought that book learning, at least the kind whose reasonings are merely probable and that do not have any demonstrations, having been composed and enlarged little by little from the opinions of many different persons, does not draw nearly so close to the truth as the simple reasonings

3. There is no need to allege that Descartes sat in or on a stove. A *poêle* is simply a room heated by an earthenware stove. Cf. É. Gilson, *Discours de la méthode: texte et commentaire*, 4th edition (Paris: Vrin, 1967), p. 157.

13 that a man of good sense can naturally make about the things he encounters. And thus, too, I thought that, because we were all children before being men and because for a long time it was necessary for us to be governed by our appetites and our teachers (which were frequently in conflict with one another, and of which perhaps neither always gave us the best advice), it is nearly impossible for our judgments to be as pure or as solid as they would have been if we had had the full use of our reason from the moment of our birth and if we had always been guided by it alone.

It is true that we never see anyone pulling down all the houses in a city for the sole purpose of rebuilding them in a different style and of making the streets more attractive; but one does see very well that many people tear down their own houses in order to rebuild them, and that in some cases they are even forced to do so when their houses are in danger of collapsing and when the foundations are not very secure. This example persuaded me that it would not really be at all reasonable for a single individual to plan to reform a state by changing everything in it from the foundations up and by toppling it in order to set it up again, nor even also to reform the body of the sciences or the order established in the schools for teaching them; but that, as regards all the opinions to which I had until now given credence, I could not do better than to try to get rid of them once and for all, in order to replace them later on, either with
14 other ones that are better, or even with the same ones once I had reconciled them to the norms of reason. And I firmly believed that by this means I would succeed in conducting my life much better than if I were to build only upon old foundations and if I were to rely only on the principles of which I had allowed myself to be persuaded in my youth without ever having examined whether they were true. For although I noticed various difficulties in this undertaking, still they were not irremediable, nor were they comparable to those difficulties occurring in the reform of the least things that affect the public. These great bodies are too difficult to raise up once they have been knocked down, or even to hold up once they have been shaken; and their fall can only be very violent. Moreover, as to their imperfections, if they have any (and the mere fact of the diversity that exists among them suffices to assure one that many do have imperfections), custom has doubtless greatly mitigated them and has even prevented or imperceptibly corrected many of them, against which prudence could not provide so well. And finally, these imperfections are almost always more tolerable than changing them would be; similarly, the great roads that wind through mountains little by little become so smooth and so convenient by dint of being frequently used, that it is much better to follow them than to try to take a more direct route by climbing over rocks and descending to the bottom of precipices.

That is why I could in no way approve of those troublemaking and restless personalities who, called neither by their birth nor by their fortune to manage public affairs, are forever coming up with an idea for some new reform in this matter. And if I thought there were in this writing 15
the slightest thing by means of which one might suspect me of such folly, I would be very sorry to permit its publication. My plan has never gone beyond trying to reform my own thoughts and building upon a foundation which is completely my own. And if, my work having pleased me sufficiently, I here show you a model of it, it is not for the reason that I would wish to advise anyone to imitate it. Perhaps those with whom God has better shared his graces will have more lofty plans; but I fear that even this one here may already be too daring for many. The single resolution to rid oneself of all the opinions to which one has heretofore given credence is not an example that everyone ought to follow; and the world consists almost exclusively of two kinds of minds for whom it is not at all suitable. First, there are those who, believing themselves more capable than they are, are unable to avoid being hasty in their judgments or to have enough patience to conduct all their thoughts in an orderly manner; as a result, if they have once taken the liberty of doubting the principles they had accepted and of straying from the common path, they could never keep to the path one must take in order to go in a more straightforward direction, and they would remain lost all their lives. Second, there are those who have enough reason or modesty to judge that they are less capable of distinguishing the true from the false than certain others by whom they can be instructed; they should content themselves more with following the opinions of these others than with looking for better ones themselves.

And as for myself, I would unquestionably have been counted among 16
these latter persons if I had always had only one master or if I had not known at all the differences that have always existed among the opinions of the most learned. But I had learned in my college days that one cannot imagine anything so strange or so little believable that it had not been said by one of the philosophers, and since then, I had recognized in my travels that all those who have sentiments quite contrary to our own are not for that reason barbarians or savages, but that many of them use their reason as much as or more than we do. And I considered how one and the same man with the very same mind, were he brought up from infancy among the French or the Germans, would become different from what he would be had he always lived among the Chinese or the cannibals, and how, even down to the styles of our clothing, the same thing that pleased us ten years ago, and that perhaps will again please us ten years hence, now seems to us extravagant and ridiculous. Thus it is more custom and example that persuades us than any certain knowledge; and yet the majority

opinion is worthless as a proof of truths that are at all difficult to discover, since it is much more likely that one man would have found them than a whole multitude of people. Hence I could not choose anyone whose opinions seemed to me should be preferred over those of the others, and I found myself, as it were, constrained to try to guide myself on my own.

But, like a man who walks alone and in the dark, I resolved to go so
17 slowly and to use so much circumspection in all things that, if I advanced only very slightly, at least I would effectively keep myself from falling. Nor did I want to begin to reject totally any of the opinions that had once been able to slip into my head without having been introduced there by reason, until I had first spent sufficient time planning the work I was undertaking and seeking the true method for arriving at the knowledge of everything of which my mind would be capable.

When I was younger, I had studied, among the parts of philosophy, a little logic, and among those of mathematics, a bit of geometrical analysis and algebra—three arts or sciences that, it seemed, ought to contribute something to my plan. But in examining them, I noticed that, in the case of logic, its syllogisms and the greater part of its other lessons served more to explain to someone else the things one knows, or even, like the art of Lully,[4] to speak without judgment concerning matters about which one is ignorant, than to learn them. And although, in effect, it might well contain many very true and very good precepts, nevertheless there are so many others mixed up with them that are either harmful or superfluous, that it is almost as difficult to separate the latter precepts from the former as it is to draw a Diana or a Minerva from a block of marble that has not yet been hewn. Then, as to the analysis of the ancients and the algebra of the moderns, apart from the fact that they apply only to very abstract matters and seem to be of no use, the former is always so closely tied to
18 the consideration of figures that it cannot exercise the understanding without greatly fatiguing the imagination; and in the case of the latter, one is so subjected to certain rules and to certain symbols, that out of it there results a confused and obscure art that encumbers the mind, rather than a science that cultivates it. That is why I thought it necessary to search for some other method embracing the advantages of these three yet free from their defects. And since the multiplicity of laws often provides

4. Ramon Llull (ca. 1236–1315), Catalan philosopher and Franciscan who wrote in defense of Christianity against the Moors by attempting to demonstrate the articles of faith by means of logic. Descartes seems to have encountered a Lullist in Dordrecht who could hold forth on any subject whatever for long periods of time. This encounter, more than any direct contact with the writings of Lull, seems to have colored Descartes' understanding of the "art of Lully." Cf. E. Gilson, *Discours de la méthode: texte et commentaire*, pp. 185–86.

excuses for vices, so that a state is much better ruled when it has but very few laws and when these are very strictly observed; likewise, in place of the large number of precepts of which logic is composed, I believed that the following four rules would be sufficient for me, provided I made a firm and constant resolution not even once to fail to observe them:

The first was never to accept anything as true that I did not plainly know to be such; that is to say, carefully to avoid hasty judgment and prejudice; and to include nothing more in my judgments than what presented itself to my mind so clearly and so distinctly that I had no occasion to call it in doubt.

The second, to divide each of the difficulties I would examine into as many parts as possible and as was required in order better to resolve them.

The third, to conduct my thoughts in an orderly fashion, by commencing with those objects that are simplest and easiest to know, in order to ascend little by little, as by degrees, to the knowledge of the most composite things, and by supposing an order even among those things that do not 19
naturally precede one another.

And the last, everywhere to make enumerations so complete and reviews so general that I was assured of having omitted nothing.

Those long chains of utterly simple and easy reasonings that geometers commonly use to arrive at their most difficult demonstrations had given me occasion to imagine that all the things that can fall within human knowledge follow from one another in the same way, and that, provided only that one abstain from accepting any of them as true that is not true, and that one always adheres to the order one must follow in deducing the ones from the others, there cannot be any that are so remote that they are not eventually reached nor so hidden that they are not discovered. And I was not very worried about trying to find out which of them it would be necessary to begin with; for I already knew that it was with the simplest and easiest to know. And considering that, of all those who have hitherto searched for the truth in the sciences, only mathematicians have been able to find any demonstrations, that is to say, certain and evident reasonings, I did not at all doubt that it was with these same things that they had examined [that I should begin]; although I expected from them no other utility but that they would accustom my mind to nourish itself on truths and not to be content with false reasonings. But it was not my plan on that account to try to learn all those particular sciences commonly called "mathematical"; and seeing that, even though their objects differed, 20
these sciences did not cease to be all in accord with one another in considering nothing but the various relations or proportions which are found in their objects, I thought it would be more worthwhile for me to examine only these proportions in general, and to suppose them to be

only in subjects that would help me make the knowledge of them easier, and without at the same time in any way restricting them to those subjects, so that later I could apply them all the better to everything else to which they might pertain. Then, having noted that, in order to know these proportions, I would sometimes need to consider each of them individually, and sometimes only to keep them in mind, or to grasp many of them together, I thought that, in order better to consider them in particular, I ought to suppose them to be relations between lines, since I found nothing more simple, or nothing that I could represent more distinctly to my imagination and to my senses; but that, in order to keep them in mind or to grasp many of them together, I would have to explicate them by means of certain symbols, the briefest ones possible; and that by this means I would be borrowing all that is best in geometrical analysis and algebra, and correcting all the defects of the one by means of the other.

In fact, I dare say the strict adherence to these few precepts I had chosen gave me such facility for disentangling all the questions to which these two sciences extend, that, in the two or three months I spent examining them, having begun with the simplest and most general, and
21 each truth that I found being a rule that later helped me to find others, not only did I arrive at a solution of many problems that I had previously judged very difficult, but also it seemed to me toward the end that, even in those instances where I was ignorant, I could determine by what means and how far it was possible to resolve them. In this perhaps I shall not seem to you to be too vain, if you will consider that, there being but one truth with respect to each thing, whoever finds this truth knows as much about a thing as can be known; and that, for example, if a child who has been instructed in arithmetic has made an addition following its rules, he can be assured of having found everything regarding the sum he was examining that the human mind would know how to find. For ultimately, the method that teaches one to follow the true order and to enumerate exactly all the circumstances of what one is seeking contains everything that gives certainty to the rules of arithmetic.

But what pleased me most about this method was that by means of it I was assured of using my reason in everything, if not perfectly, at least as well as was in my power; and in addition that I felt that in practicing this method my mind was little by little getting into the habit of conceiving its objects more rigorously and more distinctly and that, not having restricted the method to any particular subject matter, I promised myself to apply it as usefully to the problems of the other sciences as I had to those of algebra. Not that, on this account, I would have dared at the outset to undertake an examination of all the problems that presented themselves, for that would itself have been contrary to the order prescribed

by the method. But having noted that the principles of these sciences must all be derived from philosophy, in which I did not yet find any that *22* were certain, I thought that it was necessary for me first of all to try to establish some there and that, this being the most important thing in the world, and the thing in which hasty judgment and prejudice were most to feared, I should not try to accomplish that objective until I had reached a much more mature age than that of merely twenty-three, which I was then, and until I had first spent a great deal of time preparing myself for it, as much in rooting out from my mind all the wrong opinions that I had accepted before that time as in accumulating many experiences, in order for them later to be the subject matter of my reasonings, and in always practicing the method I had prescribed for myself so as to strengthen myself more and more in its use.

Part Three

And finally, just as it is not enough, before beginning to rebuild the house where one is living, simply to pull it down, and to make provision for materials and architects or to train oneself in architecture, and also to have carefully drawn up the building plans for it; but it is also necessary to be provided with someplace else where one can live comfortably while working on it; so too, in order not to remain irresolute in my actions while reason required me to be so in my judgments, and in order not to cease to live as happily as possible during this time, I formulated a provisional code of morals, which consisted of but three or four maxims, which I very much want to share with you.

The first was to obey the laws and the customs of my country, constantly *23* holding on to the religion in which, by God's grace, I had been instructed from my childhood, and governing myself in everything else according to the most moderate opinions and those furthest from excess—opinions that were commonly accepted in practice by the most judicious of those with whom I would have to live. For, beginning from then on to count my own opinions as nothing because I wished to submit them all to examination, I was assured that I could not do better than to follow those of the most judicious. And although there may perhaps be people among the Persians or the Chinese just as judicious as there are among ourselves, it seemed to me that the most useful thing was to rule myself in accordance with those with whom I had to live, and that, in order to know what their opinions truly were, I ought to pay attention to what they did rather than to what they said, not only because in the corruption of our morals there are few people who are willing to say everything they believe, but also because many do not know what they believe, for, given that the action

of thought by which one believes something is different from that by which one knows that one believes it, the one often occurs without the other. And among many opinions that are equally accepted, I would choose only the most moderate, not only because they are always the most suitable for practical affairs and probably the best (every excess usually being bad), but also so as to stray less from the true path, in case I should be mistaken, than if I had chosen one of the two extremes when it was the other one
24 I should have followed. And in particular I counted among the excesses all the promises by which one curtails something of one's freedom. Not that I disapproved of laws that, to remedy the inconstancy of weak minds, permit someone, when he has a good plan or even, for the security of commerce, some plan that is merely indifferent, to make vows or contracts that oblige him to persevere in it, but because I saw nothing in the world that always remained in the same state, and because, for my part, I promised myself to improve my judgments more and more, and never to make them worse, I would have thought I committed a grave indiscretion against good sense if, having once approved of something, I had obliged myself to take it as good again later, when perhaps it might have stopped being so or when I might have stopped considering it as such.

My second maxim was to be as firm and resolute in my actions as I could, and to follow the most doubtful opinions, once I had decided on them, with no less constancy than if they had been very well assured. In this I would be imitating travelers who, finding themselves lost in some forest, should not wander about turning this way and that, nor, worse still, stop in one place, but should always walk in as straight a line as they can in one direction and never change it for feeble reasons, even if at the outset it had perhaps been only chance that made them choose it, for by this means, even if they are not going exactly where they wish, at least they will eventually arrive somewhere where they will probably be better off than in the middle of a forest. And thus the actions of life often tolerating no delay, it is a very certain truth that, when it is not in our
25 power to discern the truest opinions, we must follow the most probable, and even if we notice no more probability in some than in others, nevertheless we must settle on some, and afterwards no longer regard them as doubtful, insofar as they relate to practical matters, but as very true and very certain, because the reason that made us decide on them appears so. And from then on this was able to free me from all the regret and remorse that usually agitate the consciences of those frail and irresolute minds that allow themselves inconstantly to go about treating as if good things they later judge to be bad.

My third maxim was always to try to conquer myself rather than fortune, and to change my desires rather than the order of the world, and

generally to accustom myself to believing that there is nothing that is completely within our power except our thoughts, so that, after we have done our best regarding things external to us, everything that is lacking for us to succeed is, from our point of view, absolutely impossible. And this alone seemed to me sufficient to prevent me in the future from desiring anything but what I was to acquire, and thus to make me contented. For, our will tending by nature to desire only what our understanding represents 26
to it as somehow possible, it is certain that, if we consider all the goods that are outside us as equally beyond our power, we will have no more regrets about lacking those that seem owed to us as our birthright when we are deprived of them through no fault of our own, than we have in not possessing the kingdoms of China or Mexico, and that, making a virtue of necessity, as they say, we shall no more desire to be healthy if we are sick, or to be free if we are in prison, than we now do to have a body made of a material as incorruptible as diamonds, or wings to fly like birds. But I admit that long exercise is needed as well as frequently repeated meditation, in order to become accustomed to looking at everything from this point of view; and I believe that it is principally in this that the secret of those philosophers consists, who in earlier times were able to free themselves from fortune's domination and who, despite sorrows and poverty, could rival their gods in happiness. For occupying themselves ceaselessly with considering the limits prescribed to them by nature, they so perfectly persuaded themselves that nothing was in their power but their thoughts, that this alone was sufficient to prevent them from having any affection for other things, and they controlled their thoughts so absolutely that in this they had some reason for reckoning themselves richer, more powerful, freer, and happier than any other men who, not having this philosophy, never thus controlled everything they wished to control, 27
however favored by nature and fortune they might be.

Finally, to conclude this code of morals, I took it upon myself to review the various occupations that men have in this life, in order to try to choose the best one, and, not wanting to say anything about the occupations of others, I thought I could not do better than to continue in that very one in which I found myself, that is to say, spending my whole life cultivating my reason and advancing, as far as I could, in the knowledge of the truth, following the method I had prescribed to myself. I had met with such extreme contentment since the time I had begun to make use of this method, that I did not believe one could obtain any sweeter or more innocent contentment in this life, and, discovering every day by its means some truths that to me seemed quite important and commonly ignored by other men, the satisfaction I had from them so filled my mind that nothing else was of any consequence to me. In addition, the three preceding

maxims were founded solely on the plan I had of continuing to instruct myself, for since God has given each of us some light to distinguish the true from the false, I would not have believed I ought to rest content for a single moment with the opinions of others, had I not proposed to use my own judgment to examine them when there would be time; and I would not have been able to free myself of scruples in following these opinions, had I not hoped that I would not, on that account, lose any
28 opportunity of finding better ones, in case there were any. And finally, I could not have limited my desires or have been content, had I not followed a path by which, thinking I was assured of acquiring all the knowledge of which I was capable, I thought I was assured by the same means of the knowledge of all the true goods that would ever be in my power. For, given that our will tends not to pursue or flee anything unless our understanding represents it to the will as either good or bad, it suffices to judge well in order to do well, and to judge as best one can, in order also to do one's very best, that is to say, to acquire all the virtues and in general all the other goods that one could acquire, and, when one is certain that this is the case, one could not fail to be contented.

When I had thus assured myself of these maxims and put them to one side along with the truths of the faith, which have always held first place among my beliefs, I judged that, as for the rest of my opinions, I could freely undertake to rid myself of them. And inasmuch as I hoped to be able to reach my goal better by conversing with men than by staying shut up any longer in the stove-heated room[5] where I had had all these thoughts, the winter was not yet over when I set out again on my travels. And in all the nine years that followed I did nothing but wander here and there in the world, trying to be more a spectator than an actor in all the comedies that are played out there; and reflecting particularly in each matter on what might render it suspect and give us occasion for erring, I meanwhile rooted out from my mind all the errors that had previously been able to
29 slip into it. Not that, in order to do this, I was imitating the skeptics who doubt merely for the sake of doubting and put on the affectation of being perpetually undecided, for, on the contrary, my entire plan tended simply to give me assurance and to cast aside the shifting earth and sand in order to find rock or clay. In this I was quite successful, it seems to me, inasmuch as, trying to discover the falsity or the uncertainty of the propositions I was examining, not by feeble conjectures but by clear and certain reasonings, I never found any that was so doubtful that I could not draw from it some quite certain conclusion, even if it had been merely that it contained nothing certain. And just as in tearing down an old house, one usually

5. See f.n. 3, p. 7.

saves the wreckage for use in building a new one, similarly, in destroying all those opinions of mine that I judged to be poorly founded, I made various observations and acquired many experiences that have since served me in establishing more certain opinions. Moreover, I continued to practice the method I had prescribed for myself, for, besides taking care generally to conduct all my thoughts according to its rules, from time to time I set aside some hours that I spent particularly in applying it to mathematical problems, or even also to some other problems that I could make as it were similar to those of mathematics, by detaching them from all the principles of the other sciences, which I did not find to be sufficiently firm, as you will see I have done in many problems that are explained in this volume.[6] And thus, without living any differently in outward appearance than do those who, having no task but to live a sweet and innocent 30
life, make a point of separating pleasures from vices, and who, in order to enjoy their leisure without becoming bored, involve themselves in all sorts of honest diversions, I did not cease to carry out my plan and to progress in the knowledge of the truth, perhaps more than if I had done nothing but read books or keep company with men of letters.

Nevertheless, those nine years slipped by before I had as yet taken any stand regarding the difficulties commonly debated among learned men, or had begun to seek the foundations of any philosophy that was more certain than the commonly accepted one. And the example of many excellent minds, who had previously had this plan and had not, it seemed to me, succeeded in it, made me imagine so much difficulty in it that perhaps I would not have dared to undertake it so soon again, if I had not seen that some had already spread the rumor that I had achieved my goal. I cannot say on what they based this opinion, and if I have contributed something to it by my conversation, this must have been because I confessed that of which I was ignorant more ingenuously than those who have studied only a little are in the habit of doing, and perhaps also because I showed the reasons I had for doubting many things that other people regard as certain, rather than because I was boasting of any learning. But having a good enough heart not to want someone to take me for something other than I was, I thought it necessary to try by every means to render myself worthy of the reputation that was bestowed on me. And 31
it is exactly eight years ago that this desire made me resolve to take my leave of all those places where I might have acquaintances, and to retire here, to a country where the long duration of the war has led to the establishment of such well-ordered discipline that the armies quartered here seem to serve only to make one enjoy the fruits of peace with even

6. Descartes also published treatises on optics, geometry, and meteorology in this same volume.

greater security, and where, in the midst of the crowd of a great and very busy people who are more concerned with their own affairs than they are curious about those of others, I have been able, without lacking any of the amenities to be found in the most bustling cities, to live as solitary and as withdrawn a life as I could in the remotest deserts.

Part Four

I do not know whether I ought to tell you about the first meditations I engaged in there, for they are so metaphysical and so out of the ordinary that perhaps they will not be to everyone's liking. And yet, in order that it should be possible to judge whether the foundations I have laid are sufficiently firm, I find myself in some sense forced to talk about them. For a long time I had noticed that in matters of morality one must sometimes follow opinions that one knows to be quite uncertain, just as if they were indubitable, as has been said above, but because I then desired to devote myself exclusively to the search for the truth, I thought it necessary that I do exactly the opposite, and that I reject as absolutely false everything in which I could imagine the least doubt, in order to see whether, after this process, something in my beliefs remained that was
32 entirely indubitable. Thus, because our senses sometimes deceive us, I wanted to suppose that nothing was exactly as they led us to imagine. And because there are men who make mistakes in reasoning, even in the simplest matters in geometry, and who commit paralogisms, judging that I was just as prone to err as any other, I rejected as false all the reasonings that I had previously taken for demonstrations. And finally, considering the fact that all the same thoughts we have when we are awake can also come to us when we are asleep, without any of them being true, I resolved to pretend that all the things that had ever entered my mind were no more true than the illusions of my dreams. But immediately afterward I noticed that, while I wanted thus to think that everything was false, it necessarily had to be the case that I, who was thinking this, was something. And noticing that this truth—*I think, therefore I am*—was so firm and so assured that all the most extravagant suppositions of the skeptics were incapable of shaking it, I judged that I could accept it without scruple as the first principle of the philosophy I was seeking.

Then, examining with attention what I was, and seeing that I could pretend that I had no body and that there was no world nor any place where I was, I could not pretend, on that account, that I did not exist at all, and that, on the contrary, from the very fact that I thought of doubting the truth of other things, it followed very evidently and very certainly
33 that I existed; whereas, on the other hand, had I simply stopped thinking,

even if all the rest of what I had ever imagined had been true, I would have had no reason to believe that I had existed. From this I knew that I was a substance the whole essence or nature of which is simply to think, and which, in order to exist, has no need of any place nor depends on any material thing. Thus this "I," that is to say, the soul through which I am what I am, is entirely distinct from the body and is even easier to know than the body, and even if there were no body at all, it would not cease to be all that it is.

After this, I considered in general what is needed for a proposition to be true and certain, for since I had just found one of them that I knew to be such, I thought I ought also to know in what this certitude consists. And having noticed that there is nothing at all in this *I think, therefore I am* that assures me that I am speaking the truth, except that I see very clearly that, in order to think, it is necessary to exist, I judged that I could take as a general rule that the things we conceive very clearly and very distinctly are all true, but that there is merely some difficulty in properly discerning which are those that we distinctly conceive.

Following this, reflecting upon the fact that I doubted and that, as a consequence, my being was not utterly perfect (for I saw clearly that it is a greater perfection to know than to doubt), I decided to search for the source from which I had learned to think of something more perfect than I was, and I plainly knew that this had to be from some nature that was 34
in fact more perfect. As to those thoughts I had of many other things outside me, such as the heavens, the earth, light, heat, and a thousand others, I had no trouble at all knowing where they came from, because, noticing nothing in them that seemed to me to make them superior to me, I could believe that, if they were true, they were dependencies of my nature, insofar as it had some perfection, and that, if they were not true, I obtained them from nothing, that is to say, they were in me because I had some defect. But the same could not hold for the idea of a being more perfect than my own, for it is a manifest contradiction to receive this idea from nothing, and because it is no less a contradiction that something more perfect should follow from and depend upon something less perfect than that something should come from nothing, I could not obtain it from myself. It thus remained that this idea had been placed in me by a nature truly more perfect than I was and that it even had within itself all the perfections of which I could have any idea, that is to say, to explain myself in a single word, that it was God. To this I added that, since I knew of some perfections that I did not at all possess, I was not the only being that existed (here, if you please, I shall freely use the terminology of the School), but that of necessity there must be something else more perfect, upon which I depended, and from which I had acquired

all that I had. For, had I been alone and independent of everything else,
35 so that I had had from myself all that small amount of perfection in which I participated in the perfect being, I would have been able, for the same reason, to have from myself everything else I knew I lacked, and thus to be myself infinite, eternal, unchanging, all-knowing, all-powerful; in short, to have all the perfections I could observe to be in God. For, following the reasonings I have just gone through, in order to know the nature of God, so far as my own nature was capable of doing so, I had only to consider, regarding all the things of which I found in myself some idea, whether or not it was a perfection to possess them, and I was assured that none of those that indicated any imperfection were in God, but that all others were in him. Thus I saw that doubt, inconstancy, sadness, and the like could not be in God, since I myself would have been happy to be exempt from them. Then, besides this, I had ideas of a number of sensible and corporeal things, for even if I were to suppose that I was dreaming and that everything I saw or imagined was false, I still could not deny that the ideas of these things were not truly in my thought. But since I had already recognized very clearly in myself that intelligent nature is distinct from corporeal nature, taking into consideration that all composition attests to dependence and that dependence is manifestly a defect, I judged from this that being composed of these two natures could not be a perfection in God and that, as a consequence, God was not thus composed, but that, if there are bodies in the world, or even intelligences,
36 or other natures that were not at all entirely perfect, their being had to depend on God's power in such wise that they could not subsist without God for a single moment.

After this, I wanted to search for other truths, and, having set before myself the object dealt with by geometers, which I conceived of as a continuous body or a space indefinitely extended in length, breadth, and height or depth, divisible into various parts which could have various shapes and sizes and which may be moved or transposed in all sorts of ways—for the geometers assume all this in their object—I went through some of their simplest demonstrations. And, having noted that the great certitude that everyone attributes to these demonstrations is founded exclusively on the fact that they are plainly conceived, following the rule that I mentioned earlier, I also noted that there was nothing at all in them that assured me of the existence of their object. For I saw very well that if one supposed, for example, a triangle, it was necessary for its three angles to be equal to two right angles, but I did not see anything in all this to assure me that there was any triangle existing in the world. On the other hand, returning to examine the idea I had of a perfect being, I found that existence was contained in it in the same way in which the

equality of its three angles to two right angles is contained in the idea of a triangle, or that the equidistance of all its parts from its center is contained in the idea of a sphere, or even more plainly still, and that, consequently, it is, at the very least, just as certain that God, who is this perfect being, is or exists, as any demonstration in geometry could be.

But what brings it about that there are many people who are persuaded 37
that it is difficult to know this and also even to know what their soul is is that they never lift their minds above sensible things and that they are so accustomed to consider nothing except by imagining it (which is a way of thinking appropriate for material things), that everything unimaginable seems to them unintelligible. This is obvious enough from the fact that even philosophers take it as a maxim in the schools that there is nothing in the understanding that has not first been in the senses, where it is nevertheless certain that the ideas of God and the soul have never been. And it seems to me that those who want to use their imagination in order to grasp these ideas are doing the very same thing as if, in order to hear sounds or to smell odors, they wanted to use their eyes. There is just this difference: the sense of sight assures us no less of the truth of its objects than do the senses of smell or hearing, whereas neither our imagination nor our senses could ever assure us of anything if our understanding did not intervene.

Finally, if there still are men who have not been sufficiently persuaded of the existence of God and of their soul by means of the reasons I have brought forward, I very much want them to know that all the other things of which they think themselves perhaps more assured, such as having a body, that there are stars and an earth, and the like, are less certain. For although one might have a moral assurance about these things, which is such that it seems one cannot doubt them without being extravagant, still 38
when it is a question of metaphysical certitude, it seems unreasonable for anyone to deny that there is not a sufficient basis for one's being completely assured about them, when one observes that while asleep one can, in the same fashion, imagine that one has a different body and that one sees different stars and a different earth, without any of these things being the case. For how does one know that the thoughts that come to us in dreams are any more false than the others, given that they are often no less vivid and explicit? And even if the best minds study this as much as they please, I do not believe they can give any reason sufficient to remove this doubt, unless they presuppose the existence of God. For first of all, even what I have already taken for a rule, namely that the things we very clearly and very distinctly conceive are all true, is assured only for the reason that God is or exists, and that he is a perfect being, and that all that is in us comes from him. It follows from this that our ideas or notions,

being real things and coming from God, cannot, in all that is clear and distinct in them, be anything but true. Thus, if we quite often have ideas that contain some falsity, this can only be the case with respect to things that have something confused or obscure about them, because in this respect they participate in nothing; that is, they are thus confused in us only because we are not perfect. And it is evident that it is no less a
39 contradiction that falsity or imperfection as such proceeds from God, than that truth or perfection proceeds from nothing. But if we did not know that all that is real and true in us comes from a perfect and infinite being, however clear and distinct our ideas were, we would have no reason that assured us that they had the perfection of being true.

But once the knowledge of God and the soul has thus made us certain of this rule, it is very easy to know that the dreams we imagine while asleep ought in no way to make us doubt the truth of the thoughts we have while awake. For if it did happen, even while asleep, that one had a very distinct idea (as, for example, if a geometer found some new demonstration), one's being asleep would not prevent its being true. And as to the most common error of our dreams, which consists in the fact that they represent to us various objects in the same way as our external senses do, it does not matter that it gives us occasion to question the truth of such ideas, since they can also deceive us quite often without our being asleep, such as when those with jaundice see everything as yellow, or when the stars or other very distant bodies appear to us much smaller than they are. For finally, whether awake or asleep, we should never allow ourselves to be persuaded except by the evidence of our reason. And it is to be observed that I say "of our reason," and not "of
40 our imagination" or "of our senses." Even though we see the sun very clearly, we should not on that account judge that it is only as large as we see it, and we can well imagine distinctly the head of a lion grafted onto the body of a goat, without having to conclude for that reason that there is a chimera in the world, for reason does not at all dictate to us that what we thus see or imagine is true. But it does dictate to us that all our ideas or notions must have some foundation of truth, for it would not be possible that God, who is all-perfect and all-truthful, would have put them in us without that. And because our reasonings are never so evident nor so complete while we are asleep as they are while we are awake, even though our imaginings while we are asleep are sometimes just as vivid and explicit as those we have while we are awake, or even more so, reason also dictates to us that our thoughts cannot all be true, since we are not all-perfect; what truth there is in them must infallibly be encountered in those we have when we are awake rather than in those we have in our dreams.

Part Five

I would be quite happy to continue and to show here the whole chain of other truths that I have deduced from these first ones. But because, in order to do this, it would now be necessary for me to speak about many questions that are a matter of controversy among the learned, with whom I have no desire to get into any quarrel, I believe it will be better for me to abstain from this and to state only in a general way what these questions are, in order to let those who are wiser judge whether it would be useful for the public to be more particularly informed about them. I have always remained firm in the resolution I had made not to suppose any principle 41
but the one I have just used to demonstrate the existence of God and of the soul, and not to accept anything as true that did not seem to me clearer and more certain than the demonstrations of the geometers had hitherto seemed. And, nevertheless, I dare say not only that have I found a means of satisfying myself within a short time regarding all the principal difficulties commonly treated in philosophy, but also that I have noted certain laws that God has so established in nature, and of which he has impressed in our souls such notions, that, after having reflected sufficiently on these matters, we cannot doubt that they are strictly adhered to in everything that exists or occurs in the world. Moreover, in considering the consequences of these laws, it seems to me that I have discovered many truths more useful and more important than all that I had previously learned or even hoped to learn.

But because I have tried to explain the principal ones among these truths in a treatise that certain considerations prevented me from publishing,[7] I could not make them better known than by stating here in summary form what the treatise contains. I had intended to include in it everything that I thought I knew, before writing it down, concerning the nature of material things. But just as painters, who are unable to represent equally well on a flat surface all the various sides of a solid body, choose one of the principal sides which they place alone facing the light of day, and, by darkening the rest with shadows, make them appear only as they can be 42
seen by someone who is looking at the principal side, just so, fearing I could not put into my discourse everything I had in mind about it, I undertook in it merely to speak at length about what I conceived with respect to light; then, at the proper time, to add something about the sun and the fixed stars, because light proceeds almost entirely from them;

7. Descartes' *Le Monde* (*The World*). See René Descartes, *Le Monde ou Traité de la lumière*, translation and introduction by Michael Sean Mahoney (New York: Abaris Books, Inc., 1979). One of the considerations preventing the publication of *Le Monde* was the trial in 1633 of Galileo by the Holy Office in Rome.

something about the heavens, because they transmit light; about planets, comets, and the earth, because they reflect light; and, in particular, about all terrestrial bodies, because they are either colored, or transparent, or luminous; and finally, about man, because he is the observer of these things. All the same, to cast all these things a little in shadow and to be able to say more freely what I judged about them without being obliged either to follow or to refute the opinions that are accepted among the learned, I resolved to leave this entire world here to their disputes, and to speak only of what would happen in a new world, were God now to create enough matter to compose it, somewhere in imaginary spaces, and were he to agitate in various ways and without order the different parts of this matter, so that he composed from it a chaos as confused as any the poets could concoct and that later he did no more than apply his ordinary concurrence to nature, and let nature act in accordance with the laws he had established. Thus, first, I described this matter and tried to represent it in such a way that there is nothing in the world, it seems to me, clearer and more intelligible, with the exception of what has already
43 been said about God and the soul, for I even explicitly supposed that in this matter there were none of those forms or qualities about which disputes occur in the schools, nor generally anything the knowledge of which was not so natural to our souls that one could not even pretend to be ignorant of it. Moreover, I showed what the laws of nature were, and, without supporting my reasons on any other principle but the infinite perfections of God, I tried to demonstrate all those laws about which one might have been able to have any doubt and to show that they are such that, even if God had created many worlds, there could not be any of them in which these laws failed to be observed. After that, I showed how, as a consequence of these laws, the greater part of the matter of this chaos had to be disposed and arranged in a certain way, which made it similar to our heavens; how, at the same time, some of its parts had to compose an earth; others, planets and comets; and still others, a sun and fixed stars. And here, dwelling on the subject of light, I explained at some length what this light was that had to be found in the sun and the stars, and how from thence it travelled in an instant across the immense spaces of the heavens, and how it was reflected from the planets and comets to the earth. To this I added also a number of things touching on the substance, position, motions, and all the various qualities of these heavens and these stars; and as a result, I thought I said enough on these matters to show that there is nothing to be observed in the things of this world which should not, or at least could not, have appeared entirely similar in
44 those of the world I was describing. From there, I went on to speak in particular about the earth: how, although I had expressly supposed that

God had not put any weight[8] in the matter out of which the earth was composed, none of its parts ceased to tend precisely toward its center; how, there being water and air on its surface, the disposition of the heavens and of the stars, principally of the moon, had to cause there an ebb and flow similar in all respects to what we observe in our seas, and, in addition, a certain coursing, as much of the water as of the air, from east to west, such as is also observed between the tropics; how mountains, seas, springs, and rivers could naturally be formed there, and how metals could make their way into mines there; how plants could grow naturally in the fields there, and generally how all the bodies called "mixed" or "composed" could be engendered there. And, among other things, because apart from the stars I know of nothing else in the world that would produce light except fire, I tried to make very clearly understood all that belonged to its nature: how it is made, how it is nourished, how sometimes it has only heat but no light, and sometimes only light but no heat; how it can introduce various colors and various other qualities into various bodies; how it melts some bodies and hardens others; how it can consume nearly all of them or turn them into ashes and smoke; and finally, how from these ashes, merely by the force of its action, it produces glass, for since this transmutation of ashes into glass seemed to me to be as awesome as 45
any other that occurs in nature, I took particular pleasure in describing it.

Yet I did not want to infer from all these things that this world has been created in the manner I was proposing, for it is much more likely that, from the beginning, God made it such as it had to be. But it is certain (and this is an opinion commonly accepted among theologians) that the action by which God preserves the world is precisely the same as that by which he created it; so that, even if, in the beginning, he had never given it any other form at all but that of a chaos, provided he established the laws of nature and bestowed his concurrence in order for nature to function just as it does ordinarily, one can believe, without doing injustice to the miracle of creation, that by this means alone all the things that are purely material could over time have been rendered such as we now see them. And their nature is much easier to conceive, when one sees them coming to be little by little in this manner, than when one considers them only in their completed state.

From the description of inanimate bodies and plants I passed to that of animals and in particular to that of human beings. But because I did

8. E. Gilson, in his *Discours de la méthode: texte et commentaire*, p. 388, observes that *pesanteur* here means the same thing as *gravitas*, a scholastic term referring to the tendency of terrestrial objects always to tend downwards. Gilson also directs the reader to *The World*, chapter xi: "On Weight."

not yet have sufficient knowledge of them to speak of them in the same manner as I did of the rest, that is to say, by demonstrating effects from causes and by showing from what seeds and in what manner nature must produce them, I contented myself with supposing that God formed the
46 body of a man exactly like one of ours, as much in the outward shape of its members as in the internal arrangement of its organs, without composing it out of any material but the type I had described, and without putting into it, at the start, any rational soul, or anything else to serve there as a vegetative or sensitive soul, but merely kindled in the man's heart one of those fires without light which I had already explained and which I did not at all conceive to be of a nature other than what heats hay when it has been stored before it is dry, or which makes new wines boil when they are left to ferment after crushing. For on examining the functions that could, as a consequence, be in this body, I found there precisely all those things that can be in us without our thinking about them, and hence, without our soul's contributing to them, that is to say, that part distinct from the body of which it has been said previously that its nature is only to think. And these are all the same features in which one can say that animals lacking reason resemble us. But I could not on that account find there any of those functions, which, being dependent on thought, are the only ones that belong to us as men, although I did find them all later on, once I had supposed that God created a rational soul and joined it to this body in a particular manner that I described.

But in order that one might be able to see how I treated this matter there, I want to place here the explanation of the movement of the heart and of the arteries, because, this being the first and most general movement that one observes in animals, on the basis of it one will easily judge what
47 one ought to think about all the others. And, in order that there might be less difficulty in understanding what I shall say on the matter, I would like those who are not at all versed in anatomy to take the trouble, before reading this, to have the heart of some large animal that has lungs dissected in their presence (for such a heart is in all respects sufficiently similar to that of a man), and to be shown the two chambers or cavities that are in it. First, there is the one on the right side of the heart, into which two very large tubes lead, namely the *vena cava,* which is the principal receptacle of the blood, and which is like the trunk of a tree of which the other veins of the body are the branches, and the arterial vein (which has thus been rather ill-named, because it is, in effect, an artery), which, taking its origin from the heart, divides up after leaving the heart into many branches that go on to be spread throughout the lungs. Then there is the chamber or cavity on the left side, into which two tubes lead in the same fashion, which are as large as or larger than the preceding ones: namely, the venous

artery (which has also been ill-named, since it is nothing but a vein), which comes from the lungs, where it is divided into many branches interlaced with those of the arterial vein and with those in the passageway called the windpipe, through which the air one breathes enters, and the great artery, which, on leaving the heart, sends its branches throughout the body. I would also like those who are not versed in anatomy to be carefully shown the eleven little membranes that, like so many little doors, open and shut the four openings in the two cavities: namely, three at the 48
entrance to the *vena cava,* where they are so disposed that they cannot in any way prevent the blood it contains from flowing into the right cavity of the heart, and yet completely prevent it from being able to leave it: three at the entrance to the arterial vein, which, being arranged totally in the other direction, readily permit the blood in this cavity to pass into the lungs, but do not permit any blood in the lungs to return there; likewise, two others at the entrance to the venous artery, which let blood flow from the lungs into the left cavity of the heart but block its return; and three at the entrance to the great artery, which permit blood to leave the heart but prevent it from returning there. And there is no need at all to search for any other reason for the number of membranes except that the opening of the venous artery, being oval-shaped because of its location, can conveniently be closed with two, while the other openings, being round, can better be closed with three. Further, I would like to make them consider that the great artery and the arterial vein are of a much harder and firmer constitution than the venous artery and the *vena cava,* and that these latter two become enlarged before entering the heart and there form, as it were, sacks, called the "auricles" of the heart, which are made of flesh similar to that of the heart; and that there is always more heat in the heart than anywhere else in the body, and, finally, that this heat is able to bring it about that, if a drop of blood enters its cavities, it promptly expands and is dilated, just as all liquids generally do when one 49
lets them fall drop by drop into some vessel that is very hot.

For, after that, I have no need to say anything else in order to explain the movement of the heart, except that, when its cavities are not full of blood, blood necessarily flows from the *vena cava* into the right cavity and from the venous artery into the left cavity, given that these two vessels are always full of blood, and their openings, which face the heart, cannot then be closed. But as soon as two drops of blood have thus entered the heart, one into each of its cavities, these drops, which can only be very large because the openings through which they enter are very wide and the vessels from whence they come are quite full of blood, are rarified and dilated because of the heat they find there, by means of which, making the whole heart inflate, they push and close the five little doors that are

at the entrances to the two vessels from whence they come, thus preventing any more blood from descending into the heart, and, continuing to become more and more rarified, they push and open the six other little doors which are at the entrances to the other two vessels by which they leave. By this means they inflate all the branches of the arterial vein and the great artery, almost at the same instant as the heart; immediately afterward the heart contracts, as do these arteries as well, because the blood that has entered them gets cooled and their six little doors close again, and the five doors of the *vena cava* and the venous artery reopen and grant
50 passage to two other drops of blood, which immediately make the heart and the arteries inflate exactly as before. And, because the blood that thus enters the heart passes through the two sacks called its auricles, it follows from this that their movement is contrary to that of the heart, and that they are deflated while the heart is inflated. As for the rest (in order that those who do not know the force of mathematical demonstrations and are not accustomed to distinguishing true reasons from probable ones should not venture to deny this without examining it), I want to put them on notice that this movement which I have just been explaining follows just as necessarily from the mere disposition of the organs that can be seen in the heart by the naked eye, and from the heat that can be felt with the fingers, and from the nature of blood, which can be known through observation, as does the movement of a clock from the force, placement, and shape of its counterweights and wheels.

But if one asks how it is that the blood in the veins is not at all dissipated in flowing thus continually into the heart, and how the arteries are never overly full of blood, since all the blood that flows through the heart is going to flow into them, to this I need give no other answer than what has already been written by an English physician,[9] to whom homage must be paid for having broken the ice in this area, and for being the first to have taught that there are many small passages at the extremities of the arteries through which the blood they receive enters into the small branches of the veins, from which it flows immediately to the heart, so that its
51 course is merely a perpetual circulation. He proves this very effectively from the common experience of surgeons, who, on binding an arm moderately tightly above the spot where they open the vein, cause the blood to flow out in even greater abundance than if they had not bound the arm at all. And just the opposite would happen if they bound the arm below,

9. William Harvey (1578–1657), English physiologist who demonstrated the function of the heart and the complete circulation of blood throughout the body. His most important work is *Anatomical Exercises on the Motion of the Heart and Blood* (1628). Descartes accepted Harvey's account of how blood circulated, but not his account of the heart's motion.

between the hand and the opening, or even if they bind it very tightly above the opening, for it is obvious that a moderately tight tourniquet, being able to prevent the blood that is already in the arm from returning to the heart through the veins, does not on that account prevent new blood from coming in through the arteries, because they are located below the veins, and their membranes, being harder, are less easy to press, and also because the blood coming from the heart tends to pass through the arteries toward the hand with greater force than it does in returning from these to the heart through the veins. And since this blood leaves the arm through the opening in one of the veins, there must necessarily be some passages below the tourniquet, that is to say, toward the extremities of the arm, through which it could come from the arteries. He also proves quite effectively what he says regarding the circulation of blood by referring to certain small membranes that are so disposed in various places along the length of the veins that they do not at all permit blood to pass from the middle of the body toward the extremities, but only to return from the extremities toward the heart; and further, by means of the experiment that shows that all the blood that is in the body can flow out of it in a very short time through just one artery when it is cut open, even if the artery is very tightly bound quite close to the heart, and cut open between the heart and the tourniquet, so that one would have no basis for imagining 52
that the blood that flowed out came from somewhere else.

But there are many other things that attest to the fact that the true cause of this movement of blood is as I have said. First, the difference that one notices between the blood leaving the veins and the blood leaving the arteries can result only from the fact that the blood is rarified and, as it were, distilled, in passing through the heart; it is thinner, livelier, and warmer just after having left the heart, that is to say, while it is in the arteries, than it is shortly before it enters the heart, that is to say, while it is in the veins. And if one takes note of it, one will find that this difference is more readily apparent near the heart and not at all so much in those places furthest removed from the heart. Then the hardness of the membranes of which the arterial vein and the great artery are composed shows well enough that the blood beats against them with more force than it does against the veins. And why would the left cavity of the heart and the great artery be larger and wider than the right cavity and the arterial vein, unless it is because the blood in the venous artery, having been only in the lungs after having passed through the heart, is thinner and is more forcefully and more easily rarified than what comes immediately from the *vena cava*? And what can physicians divine from taking the pulse, if they do not know that, as the blood changes its nature, it can be rarified by the heat of the heart more or less strongly, and more

or less quickly than before? And if one examines how this heat is communi-
53 cated to the other members, must one not admit that it is by means of the blood, which, on passing through the heart, is reheated there and from there is spread throughout the whole body? It follows from this that if one removes the blood from some part of the body, one thereupon also removes the heat; and even if the heart were as hot as a piece of glowing iron, it would not be enough to reheat the feet and hands as much as it does, if it did not continuously send new blood to them. Then, too, it is also evident from this that the true function of respiration is to bring enough fresh air into the lungs to cause the blood which comes there from the right cavity of the heart, where it has been rarified and, as it were, changed into vapors, immediately to be condensed and to be converted once again into blood before returning to the left cavity; without this process the blood could not properly aid in feeding the fire that is in the heart. This is confirmed because one sees that animals without lungs have but one single cavity in their hearts, and that children, who cannot use their lungs while enclosed within their mother's womb, have an opening through which blood flows from the *vena cava* into the left cavity of the heart, as well as a tube through which blood goes from the arterial vein to the great artery without passing through the lungs. Next, how would digestion take place in the stomach if the heart did not send heat there through the arteries, and with it some of the most fluid parts of the blood, which help dissolve the food that has gone there? And is it not easy to understand the action that changes the juice of this food into blood, if one considers that, in passing and repassing through the heart, it is distilled perhaps more than one or two hundred times a day? And
54 is anything else needed to explain nutrition and the production of the various humors that are in the body, except to say that the force with which the blood, in being rarified, passes from the heart toward the extremities of the arteries, makes some of its parts stop in those parts of the members where they are found and there take the place of others that they expel from there; and that, according to the situation or the shape or the smallness of the pores they encounter, some of the parts of the blood tend to go certain places rather than others, in just the same way that anyone can have seen various sieves of different fineness serve to separate out different grains from one another? And finally what is most remarkable in all this is the generation of the animal spirits, which are like a very subtle wind, or rather, like a very pure and lively flame that rises continuously in great abundance from the heart to the brain, and from there goes through the nerves into the muscles, and gives movement to all the members. The parts of the blood that are the most agitated and penetrating, and are thus the best suited to compose these spirits, are

going to move toward the brain rather than elsewhere; and there is no need to imagine any reason for this other than that the arteries that carry these parts of the blood there are those that come from the heart in the straightest line of all, and that, according to the laws of mechanics (which are the same as those of nature), when a number of things tend to move together in the same direction, where there is not enough room for all of them, as when the parts of the blood leaving the left cavity of the heart tend toward the brain, the weakest and least agitated must be pushed 55
aside by the strongest which by this means arrive there alone.

I had provided a sufficiently detailed explanation for all these things in the treatise that I had previously intended to publish. And then I had shown what the constitution of the nerves and muscles of the human body must be in order to make the animal spirits within them have the force to move its members, as when one observes that heads, shortly after being severed, still move about and bite the earth, even though they are no longer alive. I had also shown what changes must take place in the brain in order to cause wakefulness, sleep, and dreams; how light, sounds, odors, tastes, heat, and all the other qualities of external objects can imprint various ideas there through the mediation of the senses; how hunger, thirst, and the other internal passions can also send their ideas there; what part of them needs to be taken there for the common sense, where these ideas are received, for the memory, which preserves them, and for the imagination, which can change them in various ways and compose new ones out of them, and, by the same means, distributing the animal spirits into the muscles, make the members of this body move in as many different ways (and in a manner appropriate to the objects that present themselves to the senses and to the internal passions that are in the body), as our own bodies can, without their being guided by the will. This will in no way seem strange to those who are cognizant of how many different automata or moving machines the ingenuity of men can make, 56
without, in doing so, using more than a very small number of parts, in comparison with the great multitude of bones, muscles, nerves, arteries, veins, and all the other parts which are in the body of each animal. For they will regard this body as a machine which, having been made by the hands of God, is incomparably better ordered and has within itself movements far more wondrous than any of those that can be invented by men.

And I paused here in particular in order to show that, if there were such machines having the organs and the shape of a monkey or of some other animal that lacked reason, we would have no way of recognizing that they were not entirely of the same nature as these animals; whereas, if there were any such machines that bore a resemblance to our bodies

and imitated our actions as far as this is practically feasible, we would always have two very certain means of recognizing that they were not at all, for that reason, true men. The first is that they could never use words or other signs, or put them together as we do in order to declare our thoughts to others. For one can well conceive of a machine being so made that it utters words, and even that it utters words appropriate to the bodily actions that will cause some change in its organs (such as, if one touches it in a certain place, it asks what one wants to say to it, or, if in another place, it cries out that one is hurting it, and the like). But it could not
57 arrange its words differently so as to respond to the sense of all that will be said in its presence, as even the dullest men can do. The second means is that, although they might perform many tasks very well or perhaps better than any of us, such machines would inevitably fail in other tasks; by this means one would discover that they were acting not through knowledge but only through the disposition of their organs. For while reason is a universal instrument that can be of help in all sorts of circumstances, these organs require some particular disposition for each particular action; consequently, it is for all practical purposes impossible for there to be enough different organs in a machine to make it act in all the contingencies of life in the same way as our reason makes us act.

Now by these two means one can also know the difference between men and beasts. For it is rather remarkable that there are no men so dull and so stupid (excluding not even the insane), that they are incapable of arranging various words together and of composing from them a discourse by means of which they might make their thoughts understood, and that, on the other hand, there is no other animal at all, however perfect and pedigreed it may be, that does the like. This does not happen because they lack the organs, for one sees that magpies and parrots can utter words just as we can, and yet they cannot speak as we do, that is to say, by testifying to the fact that they are thinking about what they are saying; on the other hand, men born deaf and dumb, who are deprived of the
58 organs that aid others in speaking just as much as, or more than beasts, are wont to invent for themselves various signs by means of which they make themselves understood to those who, being with them on a regular basis, have the time to learn their language. And this attests not merely to the fact that beasts have less reason than men but that they have none at all. For it is obvious it does not need much to know how to speak; and since we notice as much inequality among animals of the same species as among men, and that some are easier to train than others, it is unbelievable that a monkey or a parrot that is the most perfect of its species would not equal in this respect one of the most stupid children or at least a child with a disordered brain, if their soul were not of a nature entirely different

from our own. And we should not confuse words with the natural movements that attest to the passions and can be imitated by machines as well as by animals. Nor should we think, as did some of the ancients, that beasts speak, although we do not understand their language, for if that were true, since they have many organs corresponding to our own, they could make themselves as well understood by us as they are by their fellow creatures. It is also a very remarkable phenomenon that, although there are many animals that show more skill than we do in some of their actions, we nevertheless see that they show none at all in many other actions. Consequently, the fact that they do something better than we do does not prove that they have any intelligence, for, were that the case, they would have more of it than any of us and would excel us in everything. 59
But rather it proves that they have no intelligence at all, and that it is nature that acts in them, according to the disposition of their organs—just as we see that a clock composed exclusively of wheels and springs can count the hours and measure time more accurately than we can with all our carefulness.

After that, I described the rational soul and showed that it can in no way be derived from the potentiality of matter, as can the other things I have spoken of, but rather that it must be expressly created; and how it is not enough for it to be lodged in the human body like a pilot in his ship, unless perhaps in order to move its members, but rather that it must be more closely joined and united to the body in order to have, in addition to this, feelings and appetites similar to our own, and thus to constitute a true man. As to the rest, I elaborated here a little on the subject of the soul because it is of the greatest importance; for, after the error of those who deny the existence of God (which I think I have sufficiently refuted), there is none at all that puts weak minds at a greater distance from the straight path of virtue than to imagine that the soul of beasts is of the same nature as ours, and that, as a consequence, we have nothing to fear or to hope for after this life any more than do flies and ants. On the other hand, when one knows how different they are, one understands much better the arguments which prove that our soul is of a nature entirely independent of the body, and consequently that it is not subject to die with it. Then, since we do not see any other causes at all for its destruction, 60
we are naturally led to judge from this that it is immortal.

Part Six

But it is now three years since I arrived at the end of the treatise that contains all these things and began to review it in order to put it into the hands of a printer, when I learned that some people to whom I defer and

whose authority over my actions can hardly be less than that of my reason over my thoughts, had disapproved of an opinion in physics, published a short time earlier by someone else,[10] concerning which I do not want to say that I was in agreement, but rather that I had not noticed anything in it, before their censuring of it, that I could imagine to be prejudicial either to religion or to the state, nor, as a consequence, had I found anything that would have prevented me from writing it, had reason persuaded me of it, and this made me fear that there might likewise be found among my opinions one in which I had been mistaken, notwithstanding the great care that I have always taken never to accept into my beliefs any new opinions for which I did not have very certain demonstrations and never to write anything that could turn to anyone's disadvantage. This was sufficient to make me change the resolution I had had to publish my opinions. For although the reasons for which I had earlier made the resolution were very strong, my inclination, which has always made me hate the business of writing books, immediately made me find enough other reasons to excuse me from it. And these reasons, both for and
61 against, are such that not only do I have some interest in stating them here, but perhaps also the public has some interest in knowing them.

I had never made much of the things that came from my mind, and so long as I had reaped no other fruits from the method I am using except my own satisfaction regarding certain problems that pertain to the speculative sciences or else my attempt at governing my moral conduct by means of the reasons which the method taught me, I believed I was under no obligation whatever to write anything about it. For as to moral conduct, everyone is so very full of his own viewpoint, that it would be possible to find as many reformers as heads, if anyone other than those God has established as rulers over his peoples or even those to whom he has given sufficient grace and zeal to be prophets were permitted to try to change anything here. And although my speculations pleased me very much, I believed that others also had their own which perhaps pleased them more. But as soon as I had acquired some general notions regarding physics, and, beginning to test them in various particular difficulties, I had noticed where they could lead and how much they differ from the principles that have been in use up to the present, I believed I could not

10. Galileo Galilei (1564–1642), Italian astronomer, mathematician and physicist. His *Dialogue . . . on the Two Chief Systems of the World* (1632), in which he advanced the theory of the movement of the earth, occasioned the Inquisitors of the Holy Office to conduct a trial in Rome and to extort a retraction of that theory from Galileo. Descartes, who also advocated a theory of terrestrial motion, was not about to let Rome sin twice against philosophy. Cf. E. Gilson, *Discours de la méthode: texte et commentaire*, pp. 439–42.

keep them hidden away without sinning grievously against the law that obliges us to procure, as much as is in our power, the common good of all men. For these notions made me see that it is possible to arrive at knowledge that would be very useful in life and that, in place of that speculative philosophy taught in the schools, it is possible to find a practical 62
philosophy, by means of which, knowing the force and the actions of fire, water, air, the stars, the heavens, and all the other bodies that surround us, just as distinctly as we know the various skills of our craftsmen, we might be able, in the same way, to use them for all the purposes for which they are appropriate, and thus render ourselves, as it were, masters and possessors of nature. This is desirable not only for the invention of an infinity of devices that would enable one to enjoy trouble-free the fruits of the earth and all the goods found there, but also principally for the maintenance of health, which unquestionably is the first good and the foundation of all the other goods of this life, for even the mind depends so greatly on the temperament and on the disposition of the organs of the body that, if it is possible to find some means to render men generally more wise and more adroit than they have been up until now, I believe that one should look for it in medicine. It is true that the medicine currently practiced contains few things whose usefulness is so noteworthy, but without intending to ridicule it, I am sure there is no one, not even among those who make a profession of it, who would not admit that everything known in medicine is practically nothing in comparison with what remains to be known, and that one could rid oneself of an infinity of maladies, as much of the body as of the mind, and even perhaps also the frailty of old age, if one had a sufficient knowledge of their causes and of all the remedies that nature has provided us. For, having the intention of spending my entire life in the search for so indispensable a 63
science, and having found a path that seems to me such that, by following it, one ought infallibly to find this science, unless one is prevented from doing so either by the brevity of life or by a lack of experiments,[11] I judged there to be no better remedy against these two obstacles than to communicate faithfully to the public the entirety of what little I had found and to urge good minds to try to advance beyond this by contributing, each according to his inclination and ability, to the experiments that must be performed and also by communicating to the public everything they might learn, in order that, with subsequent inquirers beginning where their predecessors had left off, and thus, joining together the lives and

11. *Expérience* is used by Descartes to refer to a wide range of activities, from simple observations to sophisticated scientific experiments. *Expérience* will be translated as "observations" or as "experiments," depending on the context.

labors of many, we might all advance together much further than a single individual could do on his own.

Moreover, I noticed, in regard to experiments, that they are the more necessary as one is more advanced in knowledge. For in the beginning it is better to make use only of those observations which present themselves of their own accord to our senses and which we could not ignore, provided we reflect, however so little, on them, rather than to search for unusual and contrived experiments. The reason for this is that these more unusual experiments often deceive one when one does not know yet the causes of the more common ones, and that the circumstances on which the unusual ones depend are almost always so special and so minute that it is very difficult to notice them. But the order I have held to has been the following.
64 First, I have tried to find in general the principles or first causes of all that is or can be in the world, without considering anything but God alone, who created the world, and without deriving these principles from any other source but from certain seeds of truths that are naturally in our souls. After that I examined what were the first and most ordinary effects that could be deduced from these causes; and it seems to me that by this means I had found the heavens, stars, an earth, and even, on the earth, water, air, fire, minerals, and other such things that are the most common of all and the simplest, and, as a consequence, the easiest to know. Then, when I wanted to descend to those things which were more particular, so many different ones were presented to me that I did not believe it possible for the human mind to distinguish the forms or species of bodies that are on the earth from an infinity of others that could have been there had it been the will of God to have put them there, nor, as a consequence, to make them serviceable to us, unless we advance to the causes through the effects and make use of many particular observations. After this, passing my mind again over all the objects that have ever presented themselves to my senses, I daresay I did not notice anything in them that I could not explain easily enough by means of the principles I had found. But I must also admit that the power of nature is so ample and so vast, and these principles are so simple and so general, that I notice hardly any
65 particular effect without at once knowing that it can be deduced in many different ways from them, and that ordinarily my greatest difficulty is to find in which of these ways it depends on them. For, to this end, I know of no other expedient at all except to search once more for some experiments which are such that their outcomes are not the same, if it is in one of these ways rather than in another that one ought to explain the outcome. As to the rest, I am now at the point where, it seems to me, I see quite well what approach one must take in order to make most of the experiments that can serve this purpose; but I also see that they are of

such a kind and of so great a number that neither my adroitness nor my financial resources (even if I had a thousand times more than I have) would suffice for all of them, so that, according as I henceforth have the opportunity to perform more or fewer experiments, I shall also advance more or less in the knowledge of nature. That is what I meant to make known through the treatise I had written, and to show there so clearly the utility that the public could gain from such knowledge that I would oblige all those who desire the general well-being of men (that is to say, all those who really are virtuous, not just appearing to be so through false pretenses or merely by reputation), both to communicate those experiments they have already performed and to assist me in the search for those that remain to be performed.

But since then other reasons have made me change my mind and to think that I really ought to continue to write about all the things I judged to be of some importance, to the extent that I discovered the truth with respect to them, and to take the same care in regard to them as I would take if I wanted to have them published. I did this as much to have all 66
the more of an occasion to examine them well (since without doubt one always looks more carefully at what one believes must be seen by many than at what one does only for oneself, and often the things that have seemed to me to be true when I began to conceive them have appeared false to me when I wanted to put them on paper), as in order not to lose any occasion to benefit the public, if I am able, and in order that, if my writings are worth anything, those who will have them after my death can thus use them as will be most fitting. But I must not in any way consent to their being published during my lifetime, so that neither the hostilities and the controversies to which they might be subject, nor even such reputation as they could gain for me, would give me any occasion for losing the time I have intended to use in instructing myself. For although it may be true that each man is obliged to secure as best he can the good of others, and that to be useful to no one is, strictly speaking, to be worthless, still it is also true that our concerns ought to extend further than to the present time, and that it is well to omit things that perhaps would yield some profit to those who are alive, when it is with the intention of doing other things that would yield even more profit to our posterity. In any event, I very much want people to understand that what little I have learned up until now is almost nothing in comparison to what I do not know and to what I do not despair of being able to learn, for it is almost the same with those who little by little discover the truth in the sciences as it is with those who, upon beginning to acquire wealth, 67
have less trouble making large acquisitions than they had had before, when they were poorer, in making very small ones. Or indeed, one can

compare them to army commanders whose forces typically grow in proportion to their victories and who need more skill to maintain themselves after losing a battle than they do to take cities or provinces when they have won one. For it is truly to engage in battle when one tries to overcome all the difficulties and errors that prevent us from arriving at the knowledge of the truth, and it is truly to lose a battle when one accepts a false opinion touching on a matter that is at all general and important. And afterward it requires much more skill to recover one's former position than to make great progress when one already has principles that are assured. For myself, if I have already found some truths in the sciences (and I hope the things contained in this volume will make people judge that I have found some of them), I can say that these are only things that result from and depend on five or six principal difficulties that I have surmounted and that I count as so many battles in which I have had fortune on my side. I will not even fear to say that I think I need to win only two or three more battles like them in order to succeed entirely in my plans, and that my age is not at all so advanced that, in the ordinary course of nature,
68 I might not still have enough time to bring this about. But I believe I am all the more obliged to manage well the time remaining to me, the more hope I have of being able to use it well, and doubtless I would have many opportunities to lose time, had I published the foundations of my physics. For although they are nearly all so evident that it is necessary only to understand them in order to believe them, and although there has not been a single one for which I did not believe I could give demonstrations, nevertheless, because it is impossible for them to be in agreement with all the diverse opinions of other men, I foresee that I would often be distracted by the disputes they would engender.

One could say that these disputes might be useful, as much in order that I be made aware of my faults, as in order that, if I had anything worthwhile to say, others would by this means have greater understanding of it, and that, since many can see more than one man alone, these others, by beginning right now to use it, might also help me with their discoveries. But, although I recognize that I am extremely prone to err and that I almost never rely on the first thoughts that come to me, still the experience I have of the objections that can be made against me prevents me from expecting any profit from them. For I have already often put to the test the judgments of those I took to be my friends, as well as of some others whom I took to be indifferent, and even of those too whose maliciousness and envy I knew would try hard enough to discover what affection would hide from my friends. But it has rarely happened that an objection has
69 been raised against me that I had not at all foreseen, unless it was very far removed from my subject; thus I have almost never found any critic

of my opinions who did not seem to me to be either less rigorous or less unbiased than myself. Nor have I ever observed that, through the method of disputations practiced in the schools, any truth has been discovered that had until then been unknown. For, so long as each person in the dispute aims at winning, he is more concerned with making much out of probability than with weighing the arguments on each side; and those who have long been good advocates are not, on that account, afterward better judges.

As to the utility that others might gain from the communication of my thoughts, it could not be so very great, given that I have not yet at all taken them so far that there is no need to add many things to them before applying them to actual practice. And I think I can say without vanity that, if there is anyone who is capable of doing this, it must be myself rather than someone else: not that there could not be in the world many minds incomparably greater than mine, but because one cannot conceive a thing so well and make it one's own when one learns it from someone else as one can when one discovers it for oneself. This is so true in this matter that, although I have often explained some of my opinions to people with good minds, who, while I spoke to them, seemed to understand them quite distinctly, nevertheless, when they repeated them, I noticed that they had almost always changed them in such a way that I could no longer acknowledge them as mine. In this connection, I am very happy *70*
here to ask our descendants never to believe the things people tell them came from me, unless I myself have divulged them. And I am in no way surprised by the extravagances attributed to all those ancient philosophers whose writings we do not have, nor do I judge, for that reason, that their thoughts have been so very unreasonable, given that they were the greatest minds of their time, but only that their thoughts have been poorly reported to us. For one also sees that it has almost never happened that any of their followers had ever surpassed them, and I am sure that the most impassioned of those who now follow Aristotle would believe themselves fortunate, if they had as much knowledge of nature as he had, even if it were on the condition that they would never have any more. They are like ivy, which never stretches any higher than the trees supporting it, and which often even descends again after it has reached their tops, for it seems to me that they too are redescending, that is, they are making themselves somehow less knowledgeable than if they abstained from studying; not content with knowing all that is intelligibly explained in their author, they want in addition to find the solutions there to many difficulties about which he says nothing and about which he has perhaps never thought. Still, their manner of philosophizing is very convenient for those who have only very mediocre minds, for the obscurity of the distinctions

and the principles they make use of is the reason why they can speak about all things as boldly as if they knew them, and why they can uphold
71 everything they say against the most subtle and the most adroit, without anyone's having the means of convincing them that they are mistaken. In this they seem to me like a blind man who, in order to fight without a disadvantage against someone who is sighted, had made his opponent go into the depths of some very dark cellar. And I may say that these people have an interest in my refraining from publishing the principles of the philosophy I use, for my principles being as very simple and very evident as they are, I would, by publishing them, be doing almost the same as if I were to open some windows and make some daylight enter that cellar they had gone into in order to fight. But even the best minds have no reason for wanting to know these principles, for if they want to know how to speak about all things and to acquire the reputation for being learned, they will achieve their objective more easily by contenting themselves with probability, which can be found without great difficulty in all sorts of matters, than by seeking the truth, which can only be discovered little by little in some and which, when it is a question of speaking about other matters, obliges one to confess frankly that one is ignorant of them. But if they prefer the knowledge of some few truths to the vanity of appearing to be ignorant of nothing, as no doubt it is really preferable to do, and if they want to follow a plan similar to mine, they do not, on that score, need me to say anything more except what I have already said in this discourse. For, if they are capable of advancing further than I have, then *a fortiori* they are also capable of finding for themselves all that I think I have found. Inasmuch as I have never examined anything except in an orderly manner, it is certain that what still remains for me to discover
72 is of itself more difficult and more hidden than what I have heretofore been able to discover, and they would take much less pleasure in learning it from me than from themselves. Moreover, the habit they will acquire of seeking first the easy things and then of passing little by little by degrees to other more difficult ones will serve them better than all my instructions could do. As for myself, I am convinced that, if I had been taught from my youth all the truths for which I have since then sought demonstrations, and if I had not had any difficulty in learning them, I might perhaps have never known any other truths, and at least I would never have acquired the habit and facility I think I have for always finding new truths, to the extent that I apply myself in searching for them. And, in a word, if there is any task in the world that could not be accomplished so well by anyone else but the same person who began it, it is the one on which I am working.

It is true that, with respect to experiments that can help here, one man alone cannot suffice to perform them all, but neither can he usefully

employ hands other than his own, except those of craftsmen, or such people as he could pay and whom the hope of gain, which is a very effective means, would cause to do precisely what he ordered them to do. For, as to volunteers, who, out of curiosity or a desire to learn, might offer themselves in order perhaps to help him (aside from the fact that they usually make more promises than they produce achievements, and merely make fine proposals, none of which will come to anything), they would inevitably want to be paid by the explanation of various difficulties, 73
or at least by compliments and useless conversations, which could not cost him so little time that he would not lose by it. And as to the experiments that others have already performed, even if these people did want to communicate them to him (something those who call them "secrets" would never do), they are for the most part composed of so many details and superfluous ingredients that it would be very hard for him to discern the truth in them; besides, he would find almost all of them to be so badly explained or even so false, because those who have done them strove to make them appear to be in conformity with their principles, that, if there were among them some experiments that might serve him, they could not be worth the time he would need to spend in selecting them. In this way, if there were someone in the world whom one assuredly knows to be capable of finding the greatest things and the things as beneficial to the public as possible and whom, for this cause, other men were to exert themselves to help in every way to succeed in his plans, I do not see that they could do a thing for him except to make a donation toward the expenses of the experiments he would need and, for the rest, to prevent his leisure from being wasted by the importunity of anyone. But, although I do not presume so much of myself as to want to promise anything out of the ordinary, or feast on such vain thoughts as to imagine that the public ought to be especially interested in my plans, I do not have so base a soul that I would want to accept from anyone any favor 74
that one might believe I had not deserved.

All these considerations taken together were the reason why, three years ago, I did not at all want to divulge the treatise I had on hand, and why I had even made a resolution not to make public during my lifetime any other treatise which was so general or on the basis of which one could understand the foundations of my physics. But since then there have been yet again two other reasons that have obliged me to place here certain particular essays and to render to the public some account of my actions and my plans. The first is that, if I failed to do so, many who knew of the intention I once had to have certain writings published could imagine that the reasons for which I am abstaining from doing so were more to my disadvantage than they are. For although I do not love glory excessively—

indeed, if I dare say so, I hate it, inasmuch as I judge it to be contrary to the tranquility I esteem above all things—still, I have also never tried to hide my actions as if they were crimes, nor have I taken many precautions so as not to be known. This is the case as much because I would have believed I would be doing myself an injustice, as because it would have given me a certain kind of disquiet, which again would have been contrary to the perfect peace of mind I am seeking. And because, having always been thus indifferent about the concern over being known or not known, I could not prevent my acquiring some type of reputation, I thought I ought to do my best at least to spare myself from having a bad one. The
75 other reason that has obliged me to write this is as follows: I saw more and more every day the delay that the plan I have of self-instruction is suffering because of an infinity of experiments of which I have need and which it is impossible for me to perform without the help of others. And although I do not flatter myself so much as to hope that the public will become greatly taken with my interests, still I also do not want to fail myself so much as to give those who will survive me cause to reproach me one day on the grounds that I could have left them many far better things than I had done, if I had not so badly neglected making them understand how they could contribute to my plans.

And I thought that it was easy to choose certain matters that, without being subjected to much controversy or obliging me to declare more of my principles than I desire, would nevertheless allow me to show quite clearly what I can or cannot do in the sciences. I cannot say whether I have been successful in this, and I do not at all want to prejudice the judgments of anyone in speaking for myself about my writings; but I shall be very happy if they are examined, and, in order to have more of an opportunity to do this, I am imploring all who have any objections to make against them to take the trouble to send them to my publisher and, on being advised about them by him, I shall try at the same time to append my reply to the objections, and by this means, seeing both of them together, readers will judge the truth all the more easily. For I promise never to make long replies to them, but only to admit my errors
76 very candidly, if I recognize them, or, even if I cannot perceive any, to say simply what I believe to be required for the defense of what I have written, without adding to it an explanation of any new material, in order not to become endlessly involved in one issue after another.

And, if any of those things about which I have spoken at the beginning of the *Dioptrics* and the *Meteors* are shocking at first glance because I call them suppositions and seem to lack the inclination to prove them, I entreat the reader to have the patience to read the whole thing with attention, and I hope he will find himself satisfied with it. For it seems to me that

the reasonings follow each other there in such a way that, just as the last are demonstrated by means of the first, which are their causes, so these first are reciprocally demonstrated by means of the last, which are their effects. And one must not imagine that I am here committing the fallacy that logicians call a circle, for, experience rendering the majority of these effects very certain, the causes from which I deduce these effects serve not so much to prove them as to explain them; on the contrary, it is rather the case that the causes are what are proved by the effects. And I have called them suppositions only to make it understood that I think I can deduce them from these first truths that I have explained above. But I wanted expressly not to do so, in order to prevent certain minds, who imagine that they know in one day all that someone else has thought about for twenty years as soon as he has said but two or three words to them about it, and who are the more subject to error and the less capable of truth, the more penetrating and lively they are, from being able to take 77
this occasion to build some extravagant philosophy on what they believe are my principles, and in order to prevent me from being blamed for it. For as to the opinions that are entirely mine, I do not apologize for their being new, since, if one considers well the arguments for them, I am sure that one will find them so simple and so in conformity with common sense that they will seem less extraordinary and less strange than any others one could have on the same subjects. Nor do I pride myself at all on being the first discoverer of any of them; rather, I pride myself on never having accepted them because they have or have not been said by others, but only because reason has persuaded me of them.

If craftsmen cannot immediately carry out the invention explained in the *Dioptrics,* I do not believe one could say, on that account, that it is bad, for, inasmuch as skill and practice are needed to make and adjust the machines I have described, without any detail being overlooked there, I would be no less astonished if they were to succeed on the first try than if someone were able to learn in one day to play the lute with distinction simply because he had been given a good score. And if I write in French, the language of my country, rather than in Latin, the language of my teachers, it is because I am hoping that those who use only their natural reason in all its purity will judge my opinions better than those who believe only in old books. And as to those who combine good sense with study, whom alone I wish to have as my judges, they will not at all, I am 78
sure, be so partial to Latin that they refuse to listen to my reasons because I explain them in the vernacular.

As to the rest, I do not at all want to speak here in detail about the future progress I hope to make in the sciences, or to involve myself vis-a-vis the public in any promise that I am not assured of keeping; rather

I shall say simply that I have resolved to spend the rest of my life on nothing but trying to acquire some knowledge of nature which is such that one could draw from it rules for medicine that are more reliable than those we have had to the present, and that my inclination puts me at such a great distance from all other sorts of plans, and chiefly from those that can be useful to some only by being harmful to others, that if circumstances were to force me to busy myself with them, I do not at all believe I could succeed. About this I am here making a declaration which I know very well cannot serve to make me eminent in the world, but I also have no desire to be so; and I shall always hold myself obliged more to those by whose favor I enjoy my leisure without hindrance than to those who might offer me the most honorable positions on earth.

END

Meditations on First Philosophy