

ing in comparison to the sublime marvels which the mind of intelligent investigators reveals in the heavens through long and accurate observation. This is all I can think of in regard to this particular point.

[4] Let us now examine their other argument: that physical propositions concerning which the Scripture always says the same thing, and which all the Fathers unanimously accept in the same sense, should be understood in accordance with the literal meaning of the words, without glosses or interpretations, and should be accepted and held as most true; and that, since the sun's motion and earth's rest constitute a proposition of this sort, consequently it is an article of faith to hold it as true and the contrary opinion as erroneous. Here it should be noticed, first, that some physical propositions are of a type such that by any human speculation and reasoning one can only attain a probable opinion and a verisimilar conjecture about them, rather than a certain and demonstrated science; an example is whether the stars are animate. Others are of a type such that either one has, or one may firmly believe that it is possible to have, complete certainty on the basis of experiments, long observations, and necessary demonstrations; examples are whether or not the earth and the sun move and whether or not the earth is spherical. As for the first type, I have no doubt at all that, where human reason cannot reach, and where consequently one cannot have a science, but only opinion and faith, it is appropriate piously to conform absolutely to the literal meaning of Scripture. In regard to the others, however, I should think, as stated above, that it would be proper to ascertain the facts first, so that they could guide us in finding the true meaning of Scripture; this would be found to agree absolutely with demonstrated facts, even though *prima facie* the words would sound otherwise, since two truths can never contradict each other. This doctrine seems to me very (331) correct and certain, inasmuch as I find it exactly written in St. Augustine. At one point he discusses the shape of heaven and what one should believe it to be, given that what astronomers affirm seems to be contrary to Scripture, since the former consider it round while the latter calls it stretched out like hide.³⁷ He decides one should not have the slightest worry that Scripture may contradict astronomers: one should accept its authority if what they say is false and based only on conjecture typical of human weakness; however, if what they say is proved with indubitable reasons, this Holy Father does not say that astronomers themselves be ordered to refute their demonstrations and declare their conclusion false, but he says one must show that what Scripture asserts about the hide is not contrary to those true demonstra-

tions. Here are his words (*On the Literal Interpretation of Genesis*, book 2, chapter 9): "However, someone asks how what is written in our books, 'Who stretchest out the heavens like a hide,'³⁸ does not contradict those who attribute to heaven the shape of a sphere. Now, if what they say is false, let it contradict them by all means, for the truth lies in what is said by divine authority rather than what is conjectured by human weakness. But if, by chance, they can support it with such evidence that one cannot doubt it, then we have to demonstrate that what our books say about the hide is not contrary to those true reasons."³⁹ Then he goes on to warn us that we must not be less careful in reconciling a scriptural passage with a demonstrated physical proposition than with another scriptural passage that may appear contrary. Indeed I think the caution of this saint deserves to be admired and emulated; for even in the case of obscure conclusions concerning which one cannot be sure whether they can be the subject of a science based on human demonstrations, he is very careful in declaring what one should believe. This can be seen from what he writes at the end of the second book of *On the Literal Interpretation of Genesis*, when discussing whether stars should be considered animate: "Although at present this cannot be easily known, nevertheless I think that in the course of examining Scripture one may find more appropriate passages whereby we would be entitled, if not to prove something for certain, at least to believe something on this topic based on the words of the sacred authority. Now then, always practicing a pious and serious moderation, we ought not to believe anything lightly about an obscure subject, lest (332) we reject (out of love for our error) something which later may be truly shown not to be in any way contrary to the holy books of either the Old or New Testament."⁴⁰

From this and other places it seems to me, if I am not mistaken, the intention of the Holy Fathers is that in questions about natural phenomena which do not involve articles of faith one must first consider whether they are demonstrated with certainty or known by sensory experience, or whether it is possible to have such knowledge and demonstration. When one is in possession of this, since it too is a gift from God, one must apply it to the investigation of the true meanings of the Holy Writ at those places which apparently seem to read differently. These meanings will undoubtedly be grasped by wise theologians, along with the reasons why the Holy Spirit has sometimes wanted to hide them under words with a different literal meaning, whether in order to test us or for some other reason unknown to me.

Returning to the preceding argument, if we keep in mind the primary aim of the Holy Writ, I do not think that its always saying the same thing should make us disregard this rule; for if to accommodate popular understanding the Scripture finds it necessary once to express a proposition with words whose meaning differs from the essence of the proposition, why should it not follow the same practice for the same reason every time it has to say the same thing? On the contrary, I think that to do otherwise would increase popular confusion and diminish the propensity to believe on the part of the people. Furthermore, in regard to the rest or motion of the sun and the earth, experience clearly shows that to accommodate popular understanding it is indeed necessary to assert what the words of Scripture say; for even in our age when people are more refined, they are kept in the same opinion by reasons which, when carefully examined and pondered, will be found to be most frivolous and by observations which are either completely false or totally irrelevant; nor can one try to move them since they are not capable of understanding the contrary reasons, which are dependent on extremely delicate observations and on subtle demonstrations (333) supported by abstractions whose understanding requires a very vivid imagination. Therefore, even if the sun's rest and the earth's motion were more than certain and demonstrated among the experts, it would still be necessary to utter the contrary in order to maintain credibility with large numbers of people; for among a thousand laymen who might be asked about these details, perhaps not even one will be found who would not answer that he firmly believes that the sun moves and the earth stands still. However, no one should take this very common popular consensus as an argument for the truth of what is being asserted; for if we ask the same men about the reasons and motives why they believe that way, and if on the other hand we listen to the observations and demonstrations which induce those other few to believe the opposite, we shall find that the latter are convinced by very solid reasons and the former by the simplest appearances and by empty and ridiculous considerations.

It is therefore clear that it was necessary to attribute motion to the sun and rest to the earth in order not to confuse the meager understanding of the people and not to make them obstinately reluctant to give assent to the principal dogmas which are absolutely articles of faith; but if it was necessary to do this, it is no wonder that this was most prudently done in divine Scripture. Indeed I shall say further that it was not only respect for popular inability, but also the current opinion of those times, that made the sacred writers accommodate themselves to received

usage rather than to the essence of the matter in regard to subjects which are not necessary for eternal bliss. In fact, speaking of this St. Jerome writes: "As if in the Holy Scripture many things were not said in accordance with the opinion of the time when the facts are being reported, and not in accordance with the truth of the matter" (commentary on chapter 28 of Jeremiah). Elsewhere the same saint says: "In Scripture it is customary for the historian to report many opinions as they were accepted by everyone at that time" (commentary on chapter 13 of Matthew). Finally, on the words in chapter 27 of Job, "He stretched out the north (334) over the empty space, and hangeth the earth upon nothing,"⁴¹ St. Thomas⁴² notes that Scripture calls empty and nothing the space which embraces and surrounds the earth and which we know is not empty but full of air; nevertheless, he says that Scripture calls it empty and nothing in order to accommodate the belief of the people, who think there is nothing in this space. Here are St. Thomas's words: "The upper hemisphere of the heavens seems to us nothing but a space full of air, though common people consider it empty; thus it speaks in accordance with the judgment of common people, as is the custom in Holy Scripture." Now from this I think one can obviously argue that analogously the Holy Scripture had a much greater reason to call the sun moving and the earth motionless. For if we test the understanding of common people, we shall find them much more incapable of becoming convinced of the sun's rest and earth's motion than of the fact that the space surrounding us is full of air; therefore, if the sacred authors refrained from attempting to persuade the people about this point, which was not that difficult for their understanding, it seems very reasonable to think that they followed the same style in regard to other propositions which are much more recondite.

Indeed, Copernicus himself knew how much our imagination is dominated by an old habit and by a way of conceiving things which is already familiar to us since infancy, and so he did not want to increase the confusion and difficulty of his abstraction. Thus, after first demonstrating that the motions which appear to us as belonging to the sun or the firmament (335) really belong to the earth, then, in the process of compiling their tables and applying them in practice, he speaks of them as belonging to the sun and to the part of heaven above the planets; for example, he speaks of the rising and setting of the sun and the stars, of changes in the obliquity of the zodiac and in the equinoctial points, of the mean motion and the anomaly and the prosthaphaeresis⁴³ of the sun, and other similar things, which really belong to the earth. We call

facts these things which appear to us as facts because, being attached to the earth, we are part of all its motions, and consequently we cannot directly detect these things in it but find it useful to consider it in relation to the heavenly bodies in which they appear to us. Therefore, note how appropriate it is to accommodate our usual manner of thinking.

Next consider the principle that the collective consensus of the Fathers, when they all accept in the same sense a physical proposition from Scripture, should authenticate it in such a way that it becomes an article of faith to hold it. I should think that at most this ought to apply only to those conclusions which the Fathers discussed and inspected with great diligence and debated on both sides of the issue and for which they then all agreed to reject one side and hold the other. However, the earth's motion and sun's rest are not of this sort, given that in those times this opinion was totally forgotten and far from academic dispute and was not examined, let alone followed, by anyone; thus one may believe that the Fathers did not even think of discussing it since the scriptural passages, their own opinion, and popular consensus were all in agreement, and no (336) contradiction by anyone was heard. Therefore, it is not enough to say that all the Fathers accept the earth's rest, etc., and so it is an article of faith to hold it; rather one would have to prove that they condemned the contrary opinion. For I can always say that their failure to reflect upon it and discuss it made them leave it stand as the current opinion, but not as something resolved and established. I think I can say this with very good reason: for either the Fathers reflected upon this conclusion as if it were controversial or they did not; if not, then they could not have decided anything about it, even in their minds, nor should their failure oblige us to accept those principles which they did not, even in intention, impose; whereas if they examined it with care, then they would have condemned it had they judged it to be erroneous; but there is no record of their having done this. Indeed, after some theologians began to examine it, one sees that they did not deem it to be erroneous, as one can read in Diego de Zuñiga's *Commentaries on Job*,⁴⁴ in regard to the words "Who shaketh the earth out of her place, etc." in chapter 9, verse 6; he discusses the Copernican position at length and concludes that the earth's motion is not against Scripture.

Furthermore, I would have doubts about the truth of this prescription, namely whether it is true that the Church obliges one to hold as articles of faith such conclusions about natural phenomena, which are characterized only by the unanimous interpretation of all the Fathers. I

believe it may be that those who think in this manner may want to amplify the decrees of the Councils in favor of their own opinion. For I do not see that in this regard they prohibit anything but tampering, in ways contrary to the interpretation of the Holy Church or the collective consensus of the Fathers, with those propositions which are articles of faith or involve morals and pertain (337) to edification according to Christian doctrine; so speaks the Fourth Session of the Council of Trent. However, the motion or rest of the earth or the sun are not articles of faith and are not against morals; nor does anyone want to twist scriptural passages to contradict the Holy Church or the Fathers. Indeed, those who put forth this doctrine have never used scriptural passages, for it always remains the prerogative of serious and wise theologians to interpret these passages in accordance with their true meaning. Moreover, it is quite obvious that the decrees of the Councils agree with the Holy Fathers in regard to these details; for they are very far from wanting to accept as articles of faith similar physical conclusions or to reject as erroneous the contrary opinions, so much so that they prefer to pay attention to the primary intention of the Holy Church and consider it useless to spend time trying to ascertain those conclusions. Let me tell Your Most Serene Highness what St. Augustine (*On the Literal Interpretation of Genesis*, book 2, chapter 10) answers to those brethren who ask whether it is true that the heavens move or stand still: "To them I answer that these things should be examined with very subtle and demanding arguments to determine truly whether or not it is so; but I do not have the time to undertake and pursue these investigations, nor should such time be available to those whom we desire to instruct for their salvation and for the needs and benefit of the Holy Church."⁴⁵

However, suppose one were to decide that, even in the case of propositions about natural phenomena, they should be condemned or accepted on the basis of scriptural passages which are unanimously interpreted in the same way by all the Fathers; even then I do not see that this rule would apply in our case, given that one can read in the Fathers different interpretations of the same passages. For example, Dionysius the Areopagite says that it was not the sun but the Prime Mobile which stopped;⁴⁶ St. Augustine thinks the same thing, namely that all heavenly bodies stopped; and the Bishop of Avila⁴⁷ is of the same opinion. Moreover, among the Jewish authors whom Josephus endorses, some thought that the sun did not really stop, but that it appeared so for the short time during which the Israelites defeated their enemies. Similarly, in the miracle at the time of Hezekiah,⁴⁸ Paul of Burgos thinks that it did not

take place in the sun but in the clock. (338) At any rate, I shall demonstrate further below that, regardless of the world system one assumes, it is in fact necessary to gloss and interpret the words of the text in Joshua.

[5] Finally, let us grant these gentlemen more than they ask—namely, let us submit entirely to the opinion of wise theologians. Since this particular determination was not made by the ancient Fathers, it could be made by the wise ones of our age. The controversy concerns questions of natural phenomena and dilemmas whose answers are necessary and cannot be otherwise than in one of the two controversial ways; so they should first hear the experiments, observations, reasons, and demonstrations of philosophers and astronomers on both sides of the question, and then they would be able to determine with certainty whatever divine inspiration will communicate to them. No one should hope or fear that they would reach such an important decision without inspecting and discussing very minutely all the reasons for one side and for the other, and without ascertaining the facts: this cannot be hoped for by those who would pay no attention to risking the majesty and dignity of the Holy Writ to support their self-righteous creations; nor is this to be feared by those who seek nothing but the examination of the foundations of this doctrine with the greatest care, and who do this only out of zeal for the truth and for the majesty, dignity, and authority of the Holy Writ, which every Christian must strive to uphold. No one can fail to see that this dignity is desired and upheld with much greater zeal by one group than by the other—by those who submit in every way to the Holy Church and do not ask for the prohibition of this or that opinion, but only that they be allowed to present things whereby she could more reliably be sure of making the safest choice; and not by those who, blinded by their own interests or incited by malicious suggestions, preach that she immediately flash the sword since she has the power to do it, without considering that it is not always useful to do all that one can do. This opinion was not held by the holiest Fathers. Indeed, they knew how harmful and how contrary to the primary function of the Catholic church it would be to want to use scriptural passages to establish conclusions about nature, when by means of observation and necessary demonstrations one could at some point demonstrate the contrary of what (339) the words literally say; thus not only were they very circumspect, but they left precepts for the edification of others. From St. Augustine, *On the Literal Interpretation of Genesis*, book 1, chapters 18 and 19, we have the following: "In obscure subjects very far removed from our eyes, it may happen that even

in the divine writings we read things that can be interpreted in different ways by different people, all consistent with the faith we have; in such a case, let us not rush into any one of these interpretations with such precipitous commitment that we are ruined if it is rightly undermined by a more diligent and truthful investigation; such recklessness would mean that we were struggling for our opinions and not for those of Scripture, and that we wanted to make scriptural opinion conform to ours, when we ought to want to make ours conform to that of Scripture."⁴⁹ A little further, to teach us how no proposition can be against the faith unless it is first shown to be false, he adds: "It is not against the faith as long as it is not refuted by an unquestionable truth; if this happens, then it was not contained in the divine Scripture but originated from human ignorance."⁵⁰ From this one sees the falsehood of any meanings given to scriptural passages which do not agree with demonstrated truths; and so one must search for the correct meaning of Scripture with the help of demonstrated truth, rather than taking the literal meaning of the words, which may seem the truth to our weak understanding, and trying somehow to force nature and deny observations and necessary demonstrations.

Your Highness should also note with how much circumspection this very holy man proceeds before deciding to assert that some scriptural interpretation is so certain and sure that there is no fear of encountering disturbing difficulties. Not satisfied with just any scriptural meaning which might agree with some demonstration, he adds: "But if this were proved to be true by an unquestionable argument, it would still be uncertain whether by these words the writer of the holy books meant this or something else no less true; for if the rest of the context of the passage showed that he did not intend this, then what he did intend would not thereby be falsified but would still be true and more beneficial to know."⁵¹ Now, what increases our amazement about the circumspection with which this author proceeds is the fact that he is still not completely sure upon seeing that demonstrative reasons, as well as the literal scriptural meaning and the preceding and subsequent text, (340) all point in the same direction, and so he adds the following words: "If the context of Scripture did not disprove that the writer meant this, one could still ask whether he might not have meant the other."⁵² Still he does not decide to accept this meaning or exclude that one. Rather, he does not think he can ever be sufficiently cautious, and so he continues: "If we found that he could have meant the other, then it would be uncertain which of the two he intended; and if both interpretations were

supported by solid documentation, it would not be implausible to believe that he meant both."⁵³ Next he seems to want to give the rationale for his procedure by showing us the dangers to which certain people would expose themselves, the Scripture, and the Church; these are people who, concerned more with the preservation of their own errors than with the dignity of Scripture, would want to extend its authority beyond the limits which it prescribes for itself. And so he adds the following words, which by themselves should suffice to repress and temper the excessive license which some people arrogantly take: "In fact, it often happens that even a non-Christian has views based on very conclusive reasons or observations about the earth, heaven, the other elements of this world, the motion and revolutions or the size and distances of the stars, the eclipses of the sun and moon, the cycles of years and epochs, the nature of animals, of plants, of rocks, and similar things. Now, it is very scandalous, as well as harmful and to be avoided at all costs, that any infidel should hear a Christian speak about these things as if he were doing so in accordance with Christian Scripture and should see him err so deliriously as to be forced into laughter. The distressing thing is not so much that an erring man should be laughed at, but that our authors should be thought by outsiders to believe such things, and should be criticized and rejected as ignorant, to the great detriment of those whose salvation we care about. For how can they believe our books in regard to the resurrection of the dead, the hope of eternal life, and the kingdom of heaven, when they catch a Christian committing an error about something they know very well, when they declare false his opinion taken from those books, and when they find these full of fallacies in regard to things they have already been able to observe or to establish by unquestionable argument?"⁵⁴ Finally, we can see how offended are the truly wise and prudent Fathers by these people who, in order to support propositions, they do not (341) understand, constrain scriptural passages in certain ways and then compound their first error by producing other passages which they understand even less than the former ones. This is explained by the same saint with the following words: "It is impossible to express sufficiently well how much harm and sorrow those who are reckless and presumptuous cause to prudent brethren. This happens when they begin to be rebuked and refuted for their distorted and false opinions by those who do not accept the authority of our books, and so they put forth those same books to prove and defend what they had said with very superficial recklessness and very obvious falsity, and they even quote many of their passages from

memory, considering them supporting testimony, but without understanding either what they say or what they are talking about."⁵⁵

To this type belong, I think, those who will not or cannot understand the demonstrations and observations with which the originator and the followers of this position confirm it, and who thus are concerned with putting forth Scripture. They do not notice that the more scriptural passages they produce, and the more they persist in claiming that these are very clear and not susceptible to other meanings besides what they advance, the greater the harm resulting to the dignity of Scripture if later the truth were known to be clearly contrary and were to cause confusion (especially if these people's judgment had much authority in the first place). There would be harm and confusion at least among those who are separated from the Holy Church, toward whom she is nevertheless very zealous like a mother who wants to be able to hold them on her lap. Your Highness can therefore see how inappropriate is the procedure of those who, in disputes about nature, as a first step advance arguments based on scriptural passages, especially when very often they do not adequately understand them.

However, if these people truly feel and fully believe they have the true meaning of some particular scriptural passage, it would have to follow necessarily that they are also sure of possessing the absolute truth about the physical conclusion they intend to discuss and, at the same time, that they know they have a very great advantage over the opponent, who has to defend the false side; for whoever is supporting the truth can have many sensory experiences and many necessary demonstrations on his side, (342) whereas the opponent cannot use anything but deceptive presentations, paralogisms, and fallacies. Now, if they know that by staying within the limits of the physical subject of discussion and using only philosophical weapons, they are in any case so superior to the opponent, why is it that when they come to the debate they immediately seize an irresistible and fearful weapon, so that their opponent is frightened at its mere sight? To tell the truth, I believe they are the ones who are frightened and are trying to find a new way of repelling the enemy because they are unable to resist his assaults. That is why they forbid him to use the reason he received through the Divine Goodness and why they abuse the very proper authority of the Holy Scripture, which (when adequately understood and used) can never conflict with clear observation and necessary demonstrations, as all theologians agree. However, the fact that these people take refuge in Scripture, to cover up their inability to understand and to answer the

contrary arguments, should be of no advantage to them, if I am not mistaken, since till now such an opinion has never been condemned by the Holy Church. Therefore, if they wanted to proceed with sincerity, they could remain silent and admit their inability to discuss similar subjects; or else they could first reflect that it is not within their power, nor within that of anyone but the Supreme Pontiff and the sacred Councils, to declare a proposition erroneous, but they are free to discuss whether it is false; then, understanding that it is impossible for a proposition to be both true and heretical, they should focus on the issue which more concerns them, namely on demonstrating its falsity; if they were to discover this falsity, then either it would no longer be necessary to prohibit it because no one would follow it, or its prohibition would be safe and without the risk of any scandal.

Thus let these people apply themselves to refuting the arguments of Copernicus and the others, and let them leave its condemnation as erroneous and heretical to the proper authorities; but let them not hope that the very cautious and very wise Fathers and the Infallible One with his absolute wisdom are about to make rash decisions like those into which they would be rushed by their special interests and feelings. (343) For in regard to these and other similar propositions which do not directly involve the faith, no one can doubt that the Supreme Pontiff always has the absolute power of permitting or condemning them; however, no creature has the power of making them be true or false, contrary to what they happen to be by nature and de facto. So it seems more advisable to first become sure about the necessary and immutable truth of the matter, over which no one has control, than to condemn one side when such certainty is lacking; this would imply a loss of freedom of decision and choice insofar as it would give necessity to things which are presently indifferent, free, and dependent on the will of the supreme authority. In short, if it is inconceivable that a proposition should be declared heretical when one thinks it may be true, it should be futile for someone to try to bring about the condemnation of the earth's motion and sun's rest unless he first shows it to be impossible and false.

[6] There remains one last thing for us to examine: to what extent it is true that the Joshua passage⁵⁶ can be taken without altering the literal meaning of the words and how it can be that, when the sun obeyed Joshua's order to stop, from this it followed that the day was prolonged by a large amount.

Given the heavenly motions in accordance with the Ptolemaic system, this is something which in no way can happen. For the sun's mo-

tion along the ecliptic⁵⁷ takes place in the order of the signs of the zodiac, which is from west to east; this is contrary to the motion of the Prime Mobile from east to west, which is what causes day and night; therefore, it is clear that if the sun stops its own true motion, the day becomes shorter and not longer and that, on the contrary, the way to prolong it would be to speed up the sun's motion; thus, to make the sun stay for some time at the same place above the horizon, without going down toward the west, (344) it would be necessary to accelerate its motion so as to equal the motion of the Prime Mobile, which would be to accelerate it to about three hundred and sixty times its usual motion. Hence if Joshua had wanted his words taken in their literal and most proper meaning, he would have told the sun to accelerate its motion by an amount such that, when carried along by the Prime Mobile, it would not be made to set; but his words were being heard by people who perhaps had no other knowledge of heavenly motions except for the greatest and most common one from east to west; thus he adapted himself to their knowledge and spoke in accordance with their understanding because he did not want to teach them about the structure of the spheres but to make them understand the greatness of the miracle of the prolongation of the day.

Perhaps it was this consideration that first led Dionysius the Areopagite (in the Letter to Polycarpus) to say that in this miracle the Prime Mobile stopped and, as a consequence of its stopping, all other celestial spheres stopped. The same opinion is held by St. Augustine himself (in book 2 of *On the Miracles of the Holy Scripture*),⁵⁸ and the Bishop of Avila supports it at length (in questions 22 and 24 of his commentary on chapter 10 of Joshua). Indeed one sees that Joshua himself intended to stop the whole system of celestial spheres, from his giving the order also to the moon, even though it has nothing to do with the prolongation of the day; in the injunction given to the moon one must include the orbs of the other planets, which are not mentioned here, as they are not in the rest of the Holy Scripture, since its intention has never been to teach us the astronomical sciences.

I think therefore, if I am not mistaken, that one can clearly see that, given the Ptolemaic system, it is necessary to interpret the words in a way different from their literal meaning. Guided by St. Augustine's very useful prescriptions, I should say that the best nonliteral interpretation is not necessarily this, if anyone can find another which is perhaps better and more suitable. So now I want to examine whether the same miracle could be understood in a way more in accordance with what we read in Joshua, if to the Copernican system we add (345) another discovery

which I recently made about the solar body. However, I continue to speak with the same reservations—to the effect that I am not so enamored with my own opinions as to want to place them ahead of others'; nor do I believe it is impossible to put forth interpretations which are better and more in accordance with the Holy Writ.

Let us first assume, in accordance with the opinion of the above-mentioned authors, that in the Joshua miracle the whole system of heavenly motions was stopped, so that the stopping of only one would not introduce unnecessarily universal confusion and great turmoil in the whole order of nature. Second, I think that although the solar body does not move from the same place, it turns on itself, completing an entire rotation in about one month, as I feel I have conclusively demonstrated in my *Sunspot Letters*;⁵⁹ this motion is sensibly seen to be inclined southward in the upper part of the globe, and thus to tilt northward in the lower part, precisely in the same manner as the revolutions of all planetary orbs. Third, the sun may be regarded as a noble body, and it is the source of light illuminating not only the moon and the earth but also all the other planets, which are in themselves equally dark; having conclusively demonstrated this, I do not think it would be far from correct philosophizing to say that, insofar as it is the greatest minister of nature and, in a way, the heart and soul of the world, it transmits to the surrounding bodies not only light but also (by turning on itself) motion; thus, just as all motion of an animal's limbs would cease if the motion of its heart were to cease, in the same way if the sun's rotation stopped then all planetary revolutions would also stop. Now, concerning the admirable power and strength of the sun I could quote the supporting statements of many serious writers, but I want to restrict myself to just one passage from the book *The Divine Names* by the Blessed Dionysius the Areopagite. He writes this about the sun: "Light also gathers and attracts to itself all things that are seen, that move, that are illuminated, that are heated, and in a word that are surrounded by its splendor. Thus the sun is called Helios because (346) it collects and gathers all things that are dispersed." And a little below that he again writes about the sun: "If in fact this sun, which we see and which (despite the multitude and dissimilarity of the essences and qualities of observed things) is nevertheless one, spreads its light equally and renews, nourishes, preserves, perfects, divides, joins, warms up, fertilizes, increases, changes, strengthens, produces, moves, and vitalizes all things; and if everything in this universe in accordance with its own power partakes of one and the same sun and contains within itself an equal anticipation of the

causes of the many things which are shared; then certainly all the more reason, etc." Therefore, given that the sun is both the source of light and the origin of motion, and given that God wanted the whole world system to remain motionless for several hours as a result of Joshua's order, it was sufficient to stop the sun, and then its immobility stopped all the other turnings, so that the earth as well as the moon and the sun (and all the other planets) remained in the same arrangement; and during that whole time the night did not approach, and the day miraculously got longer. In this manner, by stopping the sun, and without changing or upsetting at all the way the other stars appear or their mutual arrangement, the day on the earth could have been lengthened in perfect accord with the literal meaning of the sacred text.

Furthermore, what deserves special appreciation, if I am not mistaken, is that with the Copernican system one can very clearly and very easily give a literal meaning to another detail which one reads about the same miracle; that is, that the sun stopped in the middle of heaven. Serious theologians have raised a difficulty about this passage: it seems very probable that, when Joshua asked for the prolongation of the day, the sun was close to setting and not at the meridian; for it was then about the time of the summer solstice, and consequently the days were very long, so that if the sun had been at the meridian then it does not seem likely that it would have been necessary to pray for a lengthening of the day in order to win a battle, since the still remaining time of seven hours or more could very well have been sufficient. Motivated by this argument, very serious theologians have held that the sun really was close to setting; (347) this is also what the words "Sun, stand thou still"⁶⁰ seem to say, because if it had been at the meridian, then either there would have been no need to seek a miracle or it would have been sufficient to pray merely for some slowing down. This opinion is held by the Bishop of Gaeta,⁶¹ and it is also accepted by Magalhaens, who confirms it by saying that on the same day, before the order to the sun, Joshua had done so many other things that it was impossible to complete them in half a day; thus they really resort to interpreting the words "in the midst of heaven"⁶² somewhat implausibly, saying they mean the same as that the sun stopped while it was in our hemisphere, namely above the horizon. We can remove this and every other implausibility, if I am not mistaken, by placing the sun, as the Copernican system does and as it is most necessary to do, in the middle, namely at the center of the heavenly orbs and the planetary revolutions; for at any hour of the day, whether at noon or in the afternoon, the day would have been

lengthened and all heavenly turnings stopped by the sun stopping in the middle of the heavens, namely at the center of the heavens, where it is located. Furthermore, this interpretation agrees all the more with the literal meaning inasmuch as, if one wanted to claim that the sun's stopping occurred at the noon hour, then the proper expression to use would have been to say that it "stood still at the meridian point," or "at the meridian circle," and not "in the midst of heaven"; in fact, for a spherical body such as heaven, the middle is really and only the center.

As for other scriptural passages which seem to contradict this position, I have no doubt that, if it were known to be true and demonstrated, those same theologians who consider such passages incapable of being interpreted consistently with it (as long as they regard it as false) would find highly congenial interpretations for them; this would be especially true if they were to add some knowledge of the astronomical sciences to their expertise about Holy Writ. Just as now, when they consider it false, they think that whenever they read Scripture they only find statements repugnant to it, so if they thought otherwise they would perchance find an equal number of passages agreeing with it. Then perhaps they would judge (348) it very appropriate for the Holy Church to tell us that God placed the sun at the center of heaven and that therefore He brings about the ordered motions of the moon and the other wandering stars by making it turn around itself like a wheel, given that she sings:

Most holy Lord and God of heaven,
 Who to the glowing sky hast given
 The fires that in the east are born
 With gradual splendours of the morn;
 Who, on the fourth day, didst reveal
 The sun's enkindled flaming wheel,
 Didst set the moon her ordered ways,
 And stars their ever-winding maze.⁶³

They could also say that the word firmament is *literally* very appropriate for the stellar sphere and everything above the planetary orbs, which is totally still and motionless according to this arrangement. Similarly, if the earth were rotating, then, where one reads "He had not yet made the earth, nor the rivers, nor the poles of the terrestrial globe,"⁶⁴ one could understand its poles literally; for there would be no point in attributing these poles to the terrestrial globe if it did not have to turn around them.