There was a pause and a very hesitating "I—I—think so" from one solitary voice.

The dominie proceeded: "You have conceived very vividly, no doubt, the speed of a railroad-train running at the rate of one thousand miles a day, and now to conceive of any number of thousand miles it is only necessary to multiply that one day's run by the number of days. This *seems* easy enough, but in truth it is not; for although one thousand is easily handled by the mind when the units are small—as, for example, one thousand nuts in a bag that can be lifted by hand, or one thousand men in ranks that can be viewed at a glance—yet one thousand *miles* stretch so far beyond sight and ordinary conception that the mind wearies with the unusual magnitude, and refuses to carry it the two hundred and forty times necessary to reach the moon, and shrinks appalled at the thought of repeating four hundred times the moon's distance in order to reach the sun.

"Yet the sun's distance, ninety-two million miles, or rather the double of it, being the diameter of the earth's orbit, is the smallest unit which arithmetic will allow us to use in calculating the distance of even the nearest of the fixed stars. To prove to you that the enormous magnitudes so confidently quoted by astronomers in speaking of the star-depths are realities and not mere fancies, I will proceed to show you how those calculations are made.

"The fixed stars are known to occupy different distances from us, like trees in a surrounding forest. But we know that in a forest one single step taken in any direction will visibly alter the range of all trees within moderate distance whose line of range is at right-angles to our step, and we can easily calculate the distances of those trees from us by noting the changes thus produced. Indeed so great is this alteration in the range that not even so much as a step is necessary to make it appear—the distance between our *two* eyes is oftentimes sufficient. For example, if we stand perfectly still and look with one eye, we will see many a little bright twig or point of a tree at a hundred yards distance in perfect range with some other twig or point of a tree a hundred yards beyond. Now, if we close that eye and look with the other, we shall find that these twigs or points are thrown perceptibly out of range, although the only difference which can cause this alteration is the two and a half or three inches space between the pupil of one eye and the pupil of the other. Exactly the same effect must be taken among the fixed stars by any change in our position; their ranges must be altered; and this alteration of range is known by astronomers as their *parallax*.

"Now with a given base line this parallax will be great or small, according as the distance of the two objects in range is great or small. In a forest two points in range must be very distant from us or very near to each other, if with the base-line of even one step at right-angles to them there is no alteration in their relative position. And just so it must be among the stars. If two of them are in perfect range, and we can command a base-line of only a few thousand miles, they must be at an immense distance from us if they reveal no parallax.

"Astronomical instruments have been brought to such perfection that they enable us to detect a parallax when the difference betweeen the distance of the object and the length of the base line is as one hundred thousand to one. In other words, with a base-line of one (whether inch, mile, earth's radius, or whatever else), we can measure the parallax of an object distant one hundred thousand that lengh, and therefore can calculate its distance.

"With these facts in view, and with these instruments in hand, we will proceed now to solve the question, if we can, *what is the distance of the nearest of the fixed stars?* But which of them is nearest? We do not know; we only guess that those are nearest which are brightest, and therefore seem largest. Our judgment, however, may be delusive, for their superior brilliancy may be really due to greater size or to greater brightness of surface, while they are in fact much farther off than others less pretentious. The brightest of all the stars is Sirius, or the dog-star. We therefore make our first attempt upon it.

"There are two base-lines at our command, one of which is the earth's diameter with a stretch of eight thousand miles nearly, the other is the diameter of the earth's orbit round the sun, having a stretch of one hundred and eighty-four million miles. We try first the earth's diameter, but we find that with our base-line of eight thousand miles there is not the slightest appearance