

study. No; what I am after for the mass of readers is relaxation amid the cares of life, and exaltation above its dull monotony. And this the most ordinary reader will surely find in astronomy. He can take as much or as little of it as he pleases. The important thing is to have a book in which the wonders of the heavens are presented in a way easy to be understood. Such a book should begin at the beginning, and not go too far into the depths; above all avoiding technical terms, which only confuse and discourage readers not used to the subject. Under such conditions, I venture to predict that the most ordinary reader will find himself in a realm of enchantment more fascinating, and far more elevating, than any realm of fiction he may have explored.

In order to introduce the subject of astronomy to those who may have given it little or no attention, it may be useful to notice here, in the briefest way, a few facts of striking interest, in the hope that these may stimulate further interest of the subject.

I suppose that almost everybody knows that this earth of ours revolves around the sun once a year. But does everybody know with what amazing exactness as to time this revolution makes? We are accustomed to say it is made in 365 days. That is our loose way of stating the fact. But there is an exactness as to the time which is one of the most surprising things we know. The earth makes the round of the sun, not in 365 days, but in 365 days, and a few hours, and a few minutes, and a few seconds, and a few fractions of a second! Astronomers have made an exact calculation of the time, and have found it to be 365.2564 days! And the earth keeps to that time for thousands and thousands of years, without losing or gaining the fraction of a second! Do you know of anything more astounding than that? We talk of the constancy of the law; but surely here is a case of constancy which almost strikes us dumb. Surely we must adore the Wisdom and Power which ordained the law!

And there is a peculiar circumstance which adds more wonder to the marvel we have named. We would expect that, to ensure such amazing accuracy as to time, the earth would move at exactly the same speed during her entire course around the sun. But such is not the case. Her orbit is an ellipse, so that at certain times she is nearer to the sun than at others. When she is nearest, the sun has the most power to drag her into himself, but to counteract this increased power of the sun, the earth increases her speed at those points, and so escapes. When she gets past the danger points she goes slower, and thus makes her average speed exactly the same. And she does this every year, through thousands of years, without failure or mistake, to the fraction of a second! Do you know anything either in fact or fiction, as astounding as this?

I suppose it is generally known that this earth of ours is a small body amongst many larger ones. But just how small it is in comparison with others is perhaps not generally known. No; nor is it known to astronomers, for they can but compare the earth with certain other globes not too far away to be measured. There are uncounted millions of larger globes too far distant to be used in comparison. But, taking a few of the globes we can measure, let us compare the earth with these. We have said that the earth moves round the sun. Seven other globes make a similar revolution, but at different distances, and different rates of speed. Of these eight globes, four are small, and four are large in comparison. The

earth is one of the small group. The largest is Jupiter, which is equal to twelve hundred of our earth. What an immense globe Jupiter must be! Yes, but compared with the sun, Jupiter is small. Twelve hundred Jupiters could be buried in the sun. But then, the sun himself is small compared with some other suns. Those twinkling stars are all suns, and some of them are hundreds of times larger than ours. Besides, there are millions more of suns so far away that they appear but as illuminated dust. Yet, so far as we know, some of them may be thousands of times larger than our sun. Where is the earth now? It is a mere speck. In the boundless amplitude of creation it is no more than a grain of sand.

This leads me to say a word about the vastness of creation. It is vast beyond all conception. There are countless millions of suns so far away in space that, even to the most powerful telescope, they appear but as gold dust, of gleaming grains of sand. And still they stretch on into eternal space, beyond where they have any form whatever, appearing only as a dim shimmer of light. The effect has been compared to a candle shining through a haze—a very graphic symbol; but we have to remember that the candle shining through the haze is really a mass of countless, blazing suns. Who is there with soul so dead as not to be dazzled and staggered by such overwhelming vastness and glory?

As to the beauties that abound in the distant creation, I might call in the testimony of the colored stars. Most of these belong to the class of stars called binary or double stars; and they are of almost every tint. We find, for instance, in these double stars a combination of yellow and purple, of greenish blue and bright blue, of sea green and orange, of pale green and blue, of white and light purple, of emerald green and orange, of yellow and sapphire blue. This is sufficiently astonishing; but the wonder increases when we note that these colors change in uncertain periods. Sirius, now a white star, is described by Ptolemy as being red in his time. Two double stars described by Herschel as being white are now—one pair a golden yellow, and the other pair a yellow and reddish green. A certain star, discovered by Tycho Brahe, in four months had a transition from white to yellow, and then to red. What marvels of beauty we have here. I need hardly say that the laws which reign in these realms of mystery no man can understand.

Hence there is really no plan of the universe that really comes within our ken. We see a fragment of the plan in this solar system of ours; but even this solar system seems to be but a speck in an infinitude of worlds. The scientific mind naturally looks for a plan of things; it tries to systemize and arrange things into their proper relations. It may have been this tendency of the scientific mind that induced Dr. Russell Wallace to make a plan of the universe. But the universe is far too vast and too varied to be treated in this way. We can discern but a very small fragment of the whole; and far beyond what we see, there may be diversities of operation entirely different from those that prevail in the domain that is open to our survey. In the power and wisdom of the Creator, and the infinitude of space and time, we see possibilities as to extent and diversity which possibly man may never explore, either on this side of time or on the other side.

Meantime, the few facts I have hinted at—and these are more wonderful things than

these—may induce a further study of the glorious science of the stars. And I may say that I know of no science better suited to every capacity. You can take as little or as much of it as you please; and you will find it all fascinating. You may take it simply as an entertainment or relaxation; and it will be one of the best you can find. If you want to grow large in character and conception, this is a good school to grow in. If you want to see God, as He is reflected in His works, behold him in the starry sky. There you will see a reflection of His eternity, His almighty power, His infinite wisdom, His exactness of law, His love of variety, His supernal beauty! The farther you go into this world of wonders, the more profound will be your agreement with the Psalmist: "The heavens declare the glory of God; and the firmament sheweth his handiwork. Day unto day uttereth speech, and night unto night sheweth knowledge. There is no speech nor language where their voice is not heard."

How He Climbed.

Suspended above the desk of a Pittsburg bank president is this motto: "Do the hard things first." Ten years ago he was discount clerk in the same bank.

"How did you climb so fast?" asked the unknown writer of this story.

"I lived up to that text," he replied.

"Tell me about it."

"There's not much to tell. I had long been conscious that I was not getting up with my work; it was distasteful to me. When I opened my desk in the morning and found it covered with reminders of the work to be done during the day, I became discouraged. There were always plenty of comparatively easy things to do, and these I did first, putting off the disagreeable duties as long as possible. Result: I became intellectually lazy. I felt an increasing incapacity for my work."

"One morning I woke up, I took stock of myself to see what was the matter. Memoranda of several letters that had long needed attention stared at me from my calendar. I had been carrying them along from day to day. Inclosed in a rubber band were a number of unanswered letters which necessitated the looking up of certain information before the replies could be sent. I had tried for several days to ignore their presence."

"Suddenly the thought came to me. 'I have been doing only the easy things. By postponing the disagreeable tasks, the mean annoying little things, my mental muscles have been allowed to grow flabby. They must get some exercise.' I took off my coat and proceeded to 'clean house.' It wasn't half as hard as I had expected. Then I took a card and wrote on it: Do the Hard Things First, and I put it where I could see it every morning. I have been doing the hard things first ever since."

Holiness is not a rapturous triumph away up somewhere in vague heights of glory, s'eadfast and splendid like a sun. It is just a poor heart that makes room for Jesus.—Mark Guy Pearce.

Painful memory can only be obliterated by the full flood of joy. When happiness is complete there is no room for sad recollections; when there are no brooding moments the past is kept at bay; where there is no cause for remembrance, there is no opportunity for remorse.—Hugh Black.