the better to grasp the subject, this paper will refer to the universe in which this system is situated.

Let us in imagination anticipate one of the pleasant evenings which I hope we may enjoy in reality during the coming summer, when the sultry heat and busy turmoil of the day shall have given place to the refreshing breezes and peaceful calmness of the summer night: "On such a night let us turn our eyes to the heavens, where the planets roll and shine, and the stars, stooping from the blue vault above us, speak to our willing spirits, whilst we strive to learn the mystery of their being.

Yonder in the western sky is the planet Venus, shining, in the absence of the moon, with a dazzling brightness. It is the most attractive object in the heavens; in the south is the distant planet Saturn, which, surrounded by his wonderful ring, shines with a subdued and steady light; whilst, far, far away in the regions of space, small on account of their immense distance,

"Ten thousand brilliant gems bestow their light,
And twinkling, beautify the face of night."

These are the fixed stars; let us brace our mental faculties and strive to form some faint conception of this vast universe.

We are accustomed to speak of distances by stating the number of miles which bodies may happen to be situated from each other; this method, however, fails as a unit with which to measure this mighty structure; the mind grows dizzy beneath the millions of millions which must be used to represent distances such as we have to deal with, and the effort to grasp their full import proves a failure; we must find another unit, and perhaps of all others, light is the best.

In striving to form an estimate of distances by this method of measurement, we must remember that light travels at about twelve millions of miles per minute; every minute of time represents twelve million miles; every hour, seven hundred and twenty millions, and if we can keep this in mind, we may be able to form some idea of the mighty proportions of this vast system of suns, (for stars are suns) in which the sun and his worlds exist and move.

"If it were possible for us to wing our flight to the nearest of those stars, sweeping away from our own system, until planet after planet fades in the distance, and the sun itself shrinks into a mere star; we might alight on a strange and beautiful world, circling round a magnificent sun, which had grown and expanded as we approached, until it blazed with a splendor equal to our own; here let us pause and look out on the stars which surround us.

We have now reached the nearest of the fixed stars, and have passed over a space which light would require ten years to travel; we have reached a new world revolving around another sun; surely from this remote point we may expect new heavens as well as a new earth. But, no! Here are the old familiar constellations; Orion, the great bear, Cassiopea and Pegasus occupy the same relative position, and though we have travelled over sixty millions of millions of miles, we have not passed over one thousandeth part of the space occupied by the universe of stars."

As our distance from the stars is so great it might be supposed useless to enquire into their *physical constitution*; but even here science has to some extent, if not fully surmounted the difficulty; the light from those distant suns, though darting onward with more than the speed of lightning has been seized in its rapid flight, forced into the spectroscope of the astronomer, questioned, and in many cases has given perfectly satisfactory answers.

The spectroscope is an instrument of modern invention, and many may not understand how incandescent bodies can be analyzed by its assistance. I will make this plain.

Light, as we generally see it, is composed of several colors, we see them separately in the rainbow; blended, they form the white light of day. We call the primitive colors into which light is separated in the rainbow, or by a prism its spectrum.

"When a cool body, such as a poker, is heated in the fire, the rays it first emits