

of the brightest do not subtend an angle of one second, and that for the sun to appear less than a second it should be removed one thousand nine hundred times further distant from us. It is conjectured that their distances are nearly inversely as their apparent magnitudes.

Again, although we, in our annual orbit around the sun, are one hundred and ninety millions of miles nearer some of the stars at one time of the year than at another, yet even this immense distance makes not the least perceptible difference in their appearance to us, with the aid even of the most powerful classes, so trifling is it when compared with that of the nearest star; and though light moves at the rate of twelve millions of miles to a minute, or one hundred and ninety-two thousand nine hundred miles in a second of time, yet, according to correct data, more than a year is required for the light from the nearest stars to reach our earth, and from the telescopic stars even hundreds of years! so that the light by which they are visible to us is many and even hundreds of years old!—Some faint idea may, perhaps, be gleaned from the following analogous representation. Suppose the earth a globe one foot in diameter, the sun's distance would be about two miles, its diameter about one hundred feet, or twice the size of the largest dome of the capitol at Washington, and the moon would be 30 feet from us, with a diameter of three inches. Jupiter would be ten miles, and Uranus forty miles distant, and the nearest of the fixed stars might be the distance of the moon, or two hundred and forty thousand miles!—Our highest mountains would then be one-eightieth part of an inch, and therefore barely perceptible to the naked eye; and man, with all else indeed on the earth, would be as the finest bloom on a plum, or the thin dust upon a globe.

We might, again, for illustration, go down to the infinitesimal and invisible objects of the microscopic world, and to aid the mind, draw comparisons from the animalculæ and infusoria, millions of which float in a drop of water, or whose attenuated structures compose the solid limestone masses of the mightiest mountains. Herschel concluded that the distance of even the nearest star cannot be so small as 48,000,000,000 radii of the earth, or 192,000,000,000 miles! Dr. Walaston, by a comparison of the light of Sirius with that of the sun, ascertained that when the light from either reached the earth, that of the latter is twenty billions more intense than that of the former; and that for the sun to appear no brighter than Sirius it should be removed one hundred and forty-one thousand four hundred times further distant than it now is. He calculated the distance of Sirius from the sun to be such that its own light must be equal to *fourteen suns!*

Although we might despair of determining satisfactorily the distance of the stars by their parallaxes or otherwise, except these perhaps of the nearest, yet Arago, the present distinguished French philosopher and astronomer, has suggested a method of fixing that of the ternary of triple stars, which should be noticed. A binary star, for example, disclosing to the observer nearly its edge, would, during half of its revolution, recede from him, and during the other half would continually approach toward him. Now, if the light of that star were thirty days in travelling from

the nearest part of its orbit to our earth, it would be more than that time in passing from its most distant part; the difference, therefore, between the apparent and the calculated time, from the nearest and the most distant points of its orbit, even though it were but a few seconds, would furnish data by which to determine its distance. Thus, it will be perceived, that the semi-revolutions of the star differ by the double of the time required for the light to pass across its orbit, and half of that difference in seconds, multiplied by the number of miles which light travels in a second—say 200,000—will give to the observer the diameter of the orbit, and from this he may easily calculate the distance from the earth. In view of this M. Arago well observes: "The day in which the distance of a double star is determined, will be the day in which it may be weighed, and in which we shall know how many millions of times it contains more matter than our globe. We shall then penetrate into its internal constitution, though it may be removed from us more than 120,000,000,000,000 of leagues!"

"How distant some of the nocturnal suns!
So distant, says the sage, 'twere not absurd
To doubt that beams set out at Nature's birth
Had yet arrived at this so foreign world,
Though nothing half so rapid as their flight!"

The different colors of the stars, as alluded to by the author, is likewise a remarkable phenomenon, as well also as the changes in their situation, fifty of which were discovered by Herschel among the double stars. In one instance of the combinations—in the Lion—the revolution of stars around each other requires a period of no less than twelve hundred years. In the double star Castor, also the revolution of one around the other during fifty years has had a rotary motion of one degree a year without any alteration of the interval of five seconds between them. Many of the double stars are likewise observed to have different colors, as, for example, that of Bootes, one of which is a light red, while that of the other is a fine blue; and the period of the latter's revolution was also discovered to be sixteen hundred and eighty-one years! That of Hercules, being double, presents the larger of the two of a beautiful bluish-white, while the smaller is a rich ash color. The smaller star of Serpentina makes a revolution around the larger in a period of three hundred and seventy-five years; and the same in the double star Virginis in seven hundred and eight years! Nor are the strange changes which these and numerous other stars have undergone in their color, brightness, position, and other circumstances, less worthy of remark, but a note is quite too limited to give even a notice of them. The more curious reader is therefore, referred to Herschel's and other late works on the subject.

TO THE EDITOR OF THE HARBINGER.

DEAR SIR,—Many members of the Episcopal Church seem to imagine that those who differ from them in their religious views, are *opposed* to them, and *aim* at their *destruction*. Now this is a mistake. The charge is frequently adduced, but it is unjust and false. So far as the writer is