

made no attempts to improve their knowledge in this respect.

Nor was there any mystery about the sun even to the later Greeks. It was a great ball of fire, perhaps larger than all the islands of the Aegean put together ; it rose in the morning and went down in the evening, firmly fastened in a revolving sphere, the simplest thing in the world. Some such ideas regarding the sun were doubtless taught in the groves of Academia at the very time when the human intellect reached a height unsurpassed and unsurpassable in other lines of thought. It is true that later, the Pythagorean astronomy, pointing to the sun as the centre of the system, must have occasioned some study among the contemporaries of the great philosopher and doubtless caused them to wonder what that body was which possibly controlled the planets, but even they had a simple way of dismissing what they did not understand and they seem not to have considered that there was anything really remarkable about the sun as a body. It was still a brilliant ball of fire, and down through many centuries and even after Copernicus had positively demonstrated the sun to be the centre of the system there was nothing very mysterious about the orb itself ; it was all glory, that sufficed.

Then a new light dawns upon the world, the light of experimental philosophy, and Galileo, the father of that science, presents the "optick tube" to the sun, and demands that nature herself shall tell him something of that source of life and vigour to the earth. At the first glance it is seen that the sun, synonyme for all that is glorious and bright, is not free from blemishes ; there are dark patches upon the otherwise beautiful disc ; these require explanation, the sun may be a ball of fire, but whence these oases on its surface ? It is,

then, only since Galileo's time that the source of terrestrial life has been considered a mystery in itself, something to be studied because it held countless secrets, waiting to be drawn out by the intellect of man. We shall find that while some of these secrets have been laid bare, there are many which even in this day of advancement resist all attempts to bring them to the light. The problems which the search involves will be handed into the next century as a legacy from the nineteenth.

A great advance was made when the ancient measures of the sun's volume and mass were shown to be erroneous, and again when the mean density of this earth was determined. The sun was found to be, bulk for bulk, very much lighter than the earth, and finally the text books contained the information that the sun was a body about 860,000 miles in diameter and weighing about half as much again as an equal volume of water. Then the physicist is asked to take up the question and describe if he can the constitution of the sun from centre to circumference, notwithstanding the enormous distance which separates him from the object of his study. Here the mysteries begin, and most of the replies to our questions are prepared by the statement that "the common hypothesis is," etc.

If we call the sun a "ball of gas" we come about as near to the truth as we can probably ever get. Something of the outside we will learn presently, but what is the nucleus like ? If we think of the enormous pressure upon the centre by gravitation alone and the intense heat engendered we can readily believe that the nucleus is not a solid mass, whatever it is. So that the first instrument of research is a deduction from known physical laws. Then we proceed to examine the sun itself.