existed upon the sun, and, in addition, inferred correctly from their periodic return that the sun rotated upon its axis. But with these facts came a stand-till and no further advance was made until the invention of that most wonderful instrument, the spectroscope, by Fraunhofer in the latter half of this century. By the coercive power brought to bear upon the proud lord of day through its agency, he too, after ages of defiance, has been forced to recognize man as his master, and to add another instalment to the wondrous story of creation. The spectroscope consists essentially of a prism placed behind a slit through which light passes. If this light be compound, as is the solar light, it is decomposed into its prismatic colors and arranged in bands visible to the eye. It has been found that terrestrial elements, such as iron, nickel, etc., have characteristic spectra, that being the technical term for the colors and lines projected in the instrument, when these elements are held in a flame burning in front of the slit. Now, when solar light enters and is decomposed, the resulting spectrum is in part identical with that given by several terrestrial elements and hence it is concluded that these exist in the sun. More wonderful still by observation of the spectra, we may learn whether the body projecting it is in a solid, liquid or gaseous state. All elements so far recognized in the sun are found to be in a very high state of fusion, indicating a temperature at the lowest estimate considerably higher than the highest produced upon the earth by artificial means.

The art of photography has also been of incalculable service in the study of the sun's composition—a branch of science frequently called solar physics—to such great perfection has it been carried that we can actually photograh phenomena, which we cannot perceive with the naked eye. The reason is that feeble light will accumulate its effect upon a sensitive plate so as, in the end, to produce a sensible image, whilst the first effect produced upon the return of the eye will not be strengthened, no matter for what length of time the object be looked at.

With these three weapons, then, the telescope, the spectroscope and the camera, man has advanced to the conquest of his former deity, and we shall now examine the trophies he has already carried off from the struggle.

When we look out upon the sun as it sails through the azure vault of heaven, we see an intensely luminous body. To this science has given the name photosphere, or envelope of light. We shall see later on what is conjectured to underhe this envelope. It constitutes all of the sun that is visible to the naked eye, except during the time of a total eclipse, when another brilliantly colored envelope is seen outside of and surrounding the photosphere. Astronomers have termed this the chromosphere or envelope of color, because it presents the most brilliant hues. It may be occasionally seen with the naked eye, but usually a telescope is required, and then, as has been stated, only during a total eclipse. But this is not all. Outside of this again, the telescope, under the same circumstances, reveals yet another envelope of very tenuous matt r, which stretches far off into space, and indeed fades away so gradually that it is impossible to determine its exact limits. For want of a better name this has been christened the sun's corona. These various envelopes will later on be taken up and examined separately; for the present, let us be content with knowing that they are three in number, the photosphere, the chromosphere, and the corona. It has been found, however, that if a lens be passed over the face of the sun, the concentrated rays from the centre of the photospherethe only envelope visible to the naked eye--impart more heat than do those concentrated from its edge. Hence scientists have been led to believe that the photosphere consists of two portions, the outer one of which is in a less highly heated condition than the inner. They have, accordingly, retained the name photosphere for this inner ring, whilst the outer they have called the sun's atmosphere, thus making that body to consist of a central nucleus and four concentric rings. This, then, is the present scientific conception of the sun; but these facts were by no means the first learnt concerning it, for the spots being the most prominent phenomena, were naturally those which received the earliest atten-It has been stated that Galileo led tion. the way in proving that spots really existed on the sun. Hitherto it had been a favorite tenet with learned men that the sun was absolutely perfect, was, in fact,

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