

give separate rotations of 24d. 28m. and 26d. 46m. Our knowledge of the actual period of the rotation of the Sun can therefore only be regarded as the *mean* of a large number of observations of those maculæ, which, from their permanence of form, and invariability of position in reference to other co-existent spots, may form the basis of reliable observations

Although solar maculæ may be more frequently seen by the naked eye than is generally supposed, if the Sun's disk be attentively observed, there yet occur not more than two or three notices of this phenomenon between the beginning of the ninth and of the seventeenth centuries, on the accuracy of which we can rely. Among these I would reckon the supposed retention of Mercury within the Sun's disk for eight days, in the year 807, as recorded in the annals of the Frankish kings, first ascribed to an astronomer of the Benedictine order, and subsequently to Eginhard; the 91-days transit of Venus over the Sun, under the Calif Al-Motassem, in the year 840; and the *Signa in Sole* of the year 1096, as noticed in the *Stainedelii Chronicon*. I have, during several years, made the epochs of the mysterious obscurations of the Sun which have been recorded in history—or, to use a more correct expression, the periods of the more or less prolonged diminution of bright daylight—the subject of special investigation, both in a meteorological and a cosmical point of view.\* Since large num-

\* Although it can not be doubted that individual Greeks and Romans may have seen large Sun-spots with the naked eye, it is at all events certain that such observations have never been referred to in any of the works of Greek and Roman authors that have come down to us. The passages of Theophrastus, *De Signis*, iv., 1, p. 797; of Aratus, *Diosem.*, v., 90-92; and of Proclus, *Paraphr.*, 11, 14, in which the younger Ideler (*Meteorol. Veterum*, p. 201, and in the Commentary to Aristotle, *Meteor.*, tom. i., p. 374) thought he could discover references to the Sun's spots, merely imply that the Sun's disk, which indicates fine weather, exhibits no difference on its surface, nothing remarkable (*μηδέ τι σῆμα φέροι*), but, on the contrary, perfect uniformity. The *σῆμα*, the dappled surface, is expressly ascribed to light clouds, the atmosphere (the scholiast of Aratus says, to the thickness of the air); hence we always hear of the morning and evening Sun, because their disk, independently of all Sun-spots, are supposed, even in the present day, according to an old belief, not wholly unworthy of regard, to give notice to the farmer and the mariner, as *diaphanometera*, of coming changes of weather. The Sun's disk, on the horizon, gives an indication of the condition of the lower atmospheric strata which are nearer the Earth. The first of the Sun-spots noticed in the text as visible to the naked eye, and falsely regarded in the years 807 and 840 as transits of Mercury and Venus, is recorded in the great historical collection of Justus Reuberus, *Veteres Scriptorum* (1726), in the section *Annales Regum Francorum Pipini, Karoli Magni et Ludovici, a quodam ejus ætatis Astronomo, Ludovici re-*