THURSDAY, JUNE 26, 1879

HISTORICAL SUN-DARKENINGS

NOT a few persons appear to have been much exercised by a prognostication emanating from an American source, whereby the public are forewarned of an approaching period of sun-darkening to extend over several days. History does record instances in which the sun has been abnormally obscured or its light paled to such an extent that stars have come into view in the daytime, and Erman, Humboldt, and other writers have brought these occasions into prominent notice, the former in connection with the presumed passage of dense meteoric streams between the earth and the sun. The earliest mention of such a phenomenon appears to be in the year B.C. 44, about the time of the death of Julius Cæsar, when we read in Plutarch and Dio Cassius that the sun was paler than usual for a whole year, and gave less heat, the air continuing cold and misty. The darkness for two hours on August 22, A.D. 358, appears to have preceded the great earthquake of Nicomedia. Two years later in all the eastern provinces of the Roman Empire we are told there was "caligo a primo auroræ exortu adusque meridiem," and the stars were seen, the further description being rather applicable to a total solar eclipse; but neither the eclipse of March 4, 360, nor that of August 28, would be visible in those parts. Again, when Alaric appeared before Rome, the darkness was such that stars were seen in the daytime (Schnurrer, "Chronik der Seuchen"). Following the *Tablettes Chronologiques* of the Abbé Lenglet Dufresnoy, Alaric invested Rome A.D. 409, and became master of the city on August 24, 410; there was a visible eclipse of the sun on June 18 of the latter year, therefore while the siege was in progress; but on calculating the circumstances under which it would be seen at Rome, introducing the latest lunar elements, it appears that little more than half the sun's disk would be covered at the greatest phase about 2h. 40m. P.M., and no sensible diminution of sun-light would be occasioned by the eclipse. In 536, 567, and 626 we find mention of long periods of diminished sun-light. Schnurrer records that in 733, a year after the Saracens had been driven back beyond the Pyrenees, consequent on their defeat at Tours, "the sun darkened in an alarming manner on August 19; there appeared to be no eclipse by the moon, but rather an interruption from some meteoric substance." There was an eclipse of the sun, annular but nearly total, on the morning of August 14; it is mentioned in the Saxon Chronicle, which tells us "the sun's disk was like a black shield." The near coincidence of dates suggests in this case a connection between the darkness and the eclipse. In 934, according to a Portuguese historian, the sun lost its ordinary light for several months, and this is followed by the doubtful statement that an opening in the sky seemed to take place, with many flashes of lightning, and the full blaze of sunshine was suddenly restored. In 1091, on September 29, not 21, as given in some of the translations of Humboldt's *Cosmos*, Schnurrer relates that there was a darkening of the sun which lasted three hours, and after which it had a peculiar colour which occasioned great alarm. In another place we read: "Fuit eclipsis Solis 11 Kal. Octob. fere tres horas: Sol circa meridiem dire nigrescebat": there was no visible eclipse at this time, and the November eclipse was central only in the southern parts of the earth. A century later, or in June, 1191, according to Schnurrer, the sun was again darkened, with certain attendant effects upon nature: here the cause is easily found; on June 23 there was a total eclipse, in which the moon's shadow traversed the continent of Europe from Holland to the Crimea; the eclipse was total in this country between the coasts of Cumberland and Yorkshire. Erman refers to a sun-darkening on February 12, 1106, which was accompanied by meteors, and we read in the cometographies that on the 4th, or, according to others, on the 5th, of February in this year a star was seen from the third to the ninth hour of the day, which was distant from the sun "only a foot and a half." Matthew Paris and Matthew of Westminster term this star a comet, and we may take it to have been the same which, later in the same month, was observed in China under the sign Pisces, and which at one time was supposed to have been identical with the great comet of 1680; this body, however, would not appear to have been sufficiently near the earth as, even on the assumption of a denser constitution than usual with comets, to account for a diminution of the solar rays, by its intervention. On the last day of February, 1206, according to a Spanish writer, there was complete darkness for six hours. In 1241, "five months after the Mongol battle of Leignitz," the sun was so obscured, and the darkness became so great, that the stars were seen at the ninth hour about Michaelmas. In this case, again, the darkness referred to was undoubtedly due to the total eclipse on October 6, of which Prof. Schiaparelli has collected a full account from the Italian writers. Lastly, in 1547, from April 23-25, Kepler relates on the authority of Gemma, "the sun appeared as though suffused with blood, and many stars were visible at noon-day." Schnurrer thought this phenomenon was what the Germans call an "Hohenrauch," notwithstanding the visibility of stars.

From the above brief summary of what have been considered abnormal sun-darkenings, we see that in several cases the diminution of light has been due to the ordinary effects of a total eclipse, while it is clear that there are no grounds in the historical evidence for any prediction of a period of darkness. The nervous in these matters, and it would really appear that such exist, may take consolation therefrom.

J. R. HIND

SCIENCE AND AGRICULTURE

BRITISH agriculture, in most of its aspects, will come into prominent notice next week. The great show at Kilburn, coming as it does just now at a time of great depression for farming at home, ought to teach us some useful lessons. It should tell us that the days of rule of thumb, the days in which we did as our fathers did are over. New means, new methods, new materials, new economies, new crops, must be associated with wider views of what the world wants and with more precise knowledge of what our little islands can best supply.

If we study soils, manures, crops, live stock, implements, the after-treatment of farm produce, or the instruction of agriculturists and of labourers—in every direction we shall learn how beneficial has been, and may still be,