

# THE SUN.

**THE TRANSIT OF VENUS.**—Tonight, which will be day in the eastern hemisphere, more than fifty observations will be taken of the transit of Venus by scientific men stationed at widely separated points on the Asiatic coast, on islands in the South Pacific, and in favorable positions in Siberia. The distance of Venus from the sun is about sixty-nine millions of miles. She is the brightest of the planets. Only Mercury and Venus, having orbits within the orbit of the earth, can present the phenomenon of the passage of a planet across the disc of the sun. The transits of Mercury are much more frequent than those of Venus, in consequence of the former planet being nearer the sun, and having thus a narrower orbit and a shorter year; but they are not available for the determination of the solar parallax. The transits of Venus are of great importance, being employed for the determination of the sun's distance, the methods of which we gave in our Saturday's issue. The transits of Venus recur at alternate intervals of 8 and 103½, and 8 and 111½ years. The earliest of which we have an account was in 1639, and it is worthy of note that it was predicted and observed by an amateur astronomer, Jeremiah Horrocks, of Lancashire, England. The last occurred in 1769, and by the observations then made the solar parallax, as now received, was determined. The transit to-day is looked forward to with great interest for verifying these determinations. For fifty years astronomers have been making preparations for the observations of to-day. As has been before mentioned all the civilized governments have sent out expeditions of observation.

The transit will not be seen in any part of North or South America, as it is night there during its occurrence. If observers centrally stationed upon the earth were to telegraph to New York the instants of the transit, one of them would advise on Tuesday evening, December 8, that the planet's edge touched the outer edge of the sun at 7 minutes and 22 seconds before 9 o'clock (New York time); 15 minutes and 3 seconds afterward another would telegraph that the centre of the planet crossed the edge of the sun; at 22 minutes and 41½ seconds after 9 o'clock a dispatch would state that the planet left the inner edge of the sun and appeared completely on its disc. At 11 minutes and 33 seconds after 11 P. M. the telegraph would state that the planet was making its nearest approach to the sun's centre; at 22 seconds after 1 o'clock on the morning of December 9 that the planet was again touching the inner edge of the sun; at 15 minutes and 25½ seconds after 1 o'clock that the centre of the planet was crossing the edge of the sun; and finally, at 25 seconds after half-past 1 o'clock, that Venus had just ceased to touch the sun.

On the occasion of the last transit of Venus no useful observations could be made except those of contact. Several kinds of measuring apparatus have been invented in this country which were unknown to the astronomers of 1769, and which enable our scientific men to carry on a continuous series of observations through the whole interval between the internal contacts, which in the present instance is about four hours, and might be twice as much if the planet passed across the middle of the sun's disc, instead of over its northeastern portion. The accuracy of the work depends upon many circumstances which cannot now be fully known, but the observations of the contacts must be nearly correct to a second if they are to form an important addition to our present information, instead of being uncertain within many seconds, or even some minutes, as was the case in 1769.

To ascertain more accurately the distance of the sun from the earth is the object of these observations. Having the earth's distance from the sun, we have the measuring rod for the distances of the other planets. If none of what are called "practical" results are to be attained by the observers of this transit, they will at all events enlarge the sphere of human knowledge in one of the grandest studies which has ever occupied the mind of man.

**LETTER OF THE MESSAGE.**—As the President's message came over the wires yesterday afternoon it was put in type in THE SUN office as rapidly as received, and after being stereotyped was promptly issued in an EXTRA SUN in a more than usually correct and convenient form for the public reading. As the message is a document treating of many important and delicate matters, it is desirable that sufficient time and care be taken to avoid putting it before the people in so mutilated a condition that its sense is destroyed by gross imperfections and omissions. The real demand of the public for the document was supplied by THE SUN EXTRA to the extent of many thousands throughout the city, but it is a fact that at this day the anxiety to procure and read a President's message is not near so great among the general public as in former years.