ECLIPSES, 1885.

IN the year 1885 there will be four eclipses, — two of the sun, and two of the moon.

I. An annular eclipse of the sun, March 16; visible in North America generally as a partial eclipse, — being annular within a belt 35 miles wide, drawn through Weaverville and Fort Bidwell, Cal.; Idaho and Boise Cities, Idaho; Bannack City and Gallatin, Montana; Hudson Bay and Greenland, — occurring as follows: —

STANDARD TIME:	Begins.	Ends.	Annular.
	H. M.	H. M.	H. M.
Bangor, Me.	0 23 A.	2 58 A.	– –
Boston, Mass.	0 20 A.	2 53 A.	– –
New York, N.Y.	0 13 A.	2 46 A.	– –
Philadelphia, Penn.	0 10 A.	2 43 A.	– –
Buffalo, N.Y.	0 2 A.	2 42 A.	– –
Pittsburg, Penn.	11 58 M.	2 38 A.	– –
Cincinnati, O.	10 48 M.	1 29 A.	– –
Chicago, Ill.	10 45 M.	1 30 A.	– –
Nashville, Tenn.	10 41 M.	1 22 A.	– –
St. Louis, Mo.	10 37 M.	1 20 A.	– –
Omaha, Neb.	10 28 M.	1 15 A.	– –
Baltimore, Md.	0 7 A.	2 40 A.	– –
Washington, D.C.	0 6 A.	2 39 A.	– –
Charleston, S.C.	11 57 M.	2 24 A.	– –
Savannah, Ga.	10 54 M.	1 21 A.	– –
Jacksonville, Fla.	10 53 M.	1 17 A.	– –
Raleigh, N.C.	0 0 A.	2 31 A.	– –
Mobile, Ala.	10 33 M.	1 11 A.	– –
New Orleans, La.	10 28 M.	1 8 A.	– –
Memphis, Tenn.	10 33 M.	1 15 A.	– –
Galveston, Tex.	10 15 M.	1 0 A.	– –
St. Paul, Minn.	10 38 M.	1 25 A.	– –
Denver, Col.	9 10 M.	0 1 A.	– –
Salt Lake City, Utah	9 3 M.	11 52 M.	– –
Santa Fé, N. Mex.	9 3 M.	11 53 M.	– –
San Francisco, Cal.	7 48 M.	10 30 M.	– –
Portland, Ore.	8 2 M.	10 41 M.	– –
Boise City, Idaho	9 3 M.	11 49 M.	10 23 M.
Bannack, Montana	9 8 M.	11 57 M.	10 30 M.
Weaverville, Cal.	7 52 M.	10 33 M.	9 8 M.
Fort Bidwell, Cal.	7 57 M.	10 39 M.	9 14 M.

Duration of annulus, from $\frac{1}{2}$ to $\frac{8}{4}$ of a minute.

II. A partial eclipse of the moon, March 30; invisible in America; visible in Asia, Australia, eastern portions of Europe and Africa, and the western Pacific Ocean.

III. A total eclipse of the sun, Sept. 8; invisible in North America; visible chiefly in the South Pacific Ocean.

IV. A partial eclipse of the moon, Sept. 23, 24; visible in North and South America and the Atlantic and Pacific Oceans, happening as follows: —

STANDARD TIME:	Eastern.	Central.	Mountain.	Pacific.
	D. H. M.	D. H. M.	D. H. M.	D. H. M.
Moon enters penumbra	24 0 0 M.	23 11 0 A.	23 10 0 A.	23 9 0 A.
Moon enters shadow	24 1 14 M.	24 0 14 M.	23 11 14 A.	23 10 14 A.
Middle of the eclipse	24 2 48 M.	24 1 48 M.	24 0 48 M.	23 11 48 A.
Moon leaves shadow	24 4 22 M.	24 3 22 M.	24 2 22 M.	24 1 22 M.
Moon leaves penumbra	24 5 36 M.	24 4 36 M.	24 3 36 M.	24 2 36 M.

Magnitude of eclipse = 0.79 (moon's diameter = 1).

SYMBOLS.

☉ . . . The Sun.	♂ . . . Mars.
☾ . . . The Moon.	♃ . . . Jupiter.
☿ . . . Mercury.	♄ . . . Saturn.
♀ . . . Venus.	♅ . . . Uranus.
⊕ . . . The Earth.	♆ . . . Neptune.

☊ . . . Moon runs high.
☋ . . . Moon runs low.
☌ . . . Conjunction, or having the same longitude or right ascension.
□ . . . Quadrature, or differing 90° in longitude or right ascension.
☍ . . . Opposition, or differing 180° in longitude or right ascension.
☊ . . . Ascending node.
☋ . . . Descending node.
S . . . Appended to the stars, 'souths,' or crosses the meridian.

♈ . . . Aries.	♎ . . . Libra.
♉ . . . Taurus.	♏ . . . Scorpio.
♊ . . . Gemini.	♐ . . . Sagittarius.
♋ . . . Cancer.	♑ . . . Capricornus.
♌ . . . Leo.	♒ . . . Aquarius.
♍ . . . Virgo.	♓ . . . Pisces.

SUN-TIME AND CLOCK-TIME.

ONE very often hears some friend say, when extolling the merits of his watch, that he sets the sun by it. It is doubtless supposed by many that the sun is most regular in its habits, and crosses the meridian exactly at noon; and it was with a feeling of regret at parting company with a so-supposed faithful time-keeper, that many set their watches to standard time on the 19th of November, 1883. If the orbit of the earth were perfectly circular, and the sun revolved around an axis perpendicular to the plane of the orbit, then the sun would have the reliable character with which it is now credited; but, unfortunately, the orbit is not circular, and the earth revolves about an axis inclined to the plane of the orbit, so that the apparent motion of the sun varies in rate from time to time through the year. And as it is convenient for us to have our days of equal length, the mean time to which we set our clocks differs from solar time by as much as fifteen minutes on the 10th of February, and fully sixteen minutes on the 27th of October. The relation between mean time (the time we use on our clocks and watches) and solar or apparent time (that of the sun-dial) is readily