

doubtless led to invent the gnomon, or sun dial. The increasing or decreasing length of the shadows of tree and rock where shelter was sought from the fervid heat of the noontday sun, led to the discovery that the shadows would mark, with a degree of certainty, the limits of the sun's motion North and South, as well as serve to denote the changes of seasons and the actual length of the year.

Engaged in watching the moon and tracking the sun through the constellations, it could not have been very long ere one or more of the planets, those "wanderers among the stars," were discovered. In his early attempt to read the handwriting on the heavenly scroll, man up to a certain point must have believed that only the sun and moon were apparently on the move, and that all the bright points of light were eternally fixed in the star sphere. The first planet discovered must have been Venus, she being the brightest of the heavenly host; next the moon. Noticed as a star, near the sun; the first brilliant to appear in the evening skies, her position would be found to change until it could not be disputed, but Venus was moving out from the sun. Here was a discovery! What conjectures must they have hazarded, those primitive astronomers, as Venus, like a smaller moon, moved slowly on. Would she, like the moon, complete a circuit of the heavens, and finally be overtaken by the sun? Time alone could answer this question. Time and watching did answer it. When about a sign and a half [ $45^\circ$ ] from the sun, Venus was seen to hesitate, to stop on the celestial course, and then oscillate back, allowing the sun eventually to overtake her, when she became lost in the brightness of his beams. And so the early astronomers named Venus a planet or "wanderer."

Discovery again led to discovery. Groups of stars that were lost in the solar rays in the evening, were found to finally reappear before daybreak in the east. Venus would be watched until she also reappeared as a "morning star," when, still moving among the stars, she would be traced through a similar course as when she had been an "evening star." The discovery of one led to that of several other planets. Jupiter, Mars, Saturn and Mercury must have followed in the order named. A belief in the existence of a planet beyond Saturn is said to have existed amongst pre-historic astronomers, and the discovery of Uranus in the eighteenth century by Sir William Herschel may only have been a re-discovery after all.

Astronomy by this time had become a science. Its votaries were already able to predict with considerable accuracy the length of the day, season and year, as well as the return of moon and planets to their original positions. The prediction of eclipses would follow in time—

not perhaps to the moment, as with us, but at least to the day. The watching of the moon's phases and the phenomena observed at eclipses revealed to those primitive watchers the fact that the moon shone with a light borrowed from the sun, and that she sometimes passed over the sun and stars. Her place in space was accordingly defined as nearest the earth.

We need not to trace the mind of man as it slowly toiled onwards, overcoming its difficulties and deducing from the night watches of ages the fact that Mercury and Venus were near the sun, that Mars, Jupiter and Saturn were beyond, and that the stars were beyond all. Sufficient has been said to show that astronomy had its original home somewhere in those eastern lands, where all religion, all tradition, seems finally traceable, that it arose in one place, because ancient nations, widely scattered, Persians, Hindoos, Chinese, Egyptians, Chaldeans, all divided their week into seven days, all called those seven days by similar names, all dedicated one day each to sun, moon and the five visible planets.

Shall we, armed with the appliances of science, whose telescopic vision reaches the clustering of thousands of stars apparently without limit or number; we, whose universe has been extended until there seems no limit to vision; we, who find thousands of suns where those ancestors of ours had to be content with star points; shall we, I ask, despise the minds in whom our science had its beginning? Is not the tree known by its fruit? The astronomical germ, fructifying in the earliest ages, should be just as precious to a true astronomer as the latest discovery of a perfected science. If we have risen, it is owing to our earlier co-laborers. Inseparably joined, the astronomer of the present stands stretching out one hand forward to the astronomer of the future, and groping with the other hand for the astronomer of the past. Of the men who have belonged to the past, the present astronomer says, slightly paraphrasing Walt. Whitman's words:

"We use them, we do not cast them aside—we plant them permanently within us, We fathom them not—we love them—there was perfection in them also. They furnished their parts toward eternity, great or small, they furnished their parts."

Meeting adjourned at 10.20.

### MARCH MEETING

OF THE CENTRAL COMMITTEE—SUCCESSFUL LECTURES—"ASTRONOMY AND METEOROLOGY"—THE CONDITION OF MARS—ICE AND ICEBERGS.

The twenty-first monthly and twenty-second regular meeting of the Astro-Meteorological Association (Central Committee) took place at the Fraser Institute, Montreal, on Friday evening, March 4th, at 8 p.m.

There were present: Messrs. Walter H. Smith, (presiding); Secretary J. Brown; Treasurer M. Austin; Associates: A. J. Pigeon, E. W. Beuthner, P. Charbonneau, H. Wray, J. S. Vipond, J. Parratt, Mrs. Smith, Mrs. Parratt and Mrs. Brown.

The minutes of the previous meeting having been read and confirmed, the President announced that a large audience had assembled to listen to his illustrated lecture "The Worlds around us" at St. Bartholomew's on the evening of February 24th, and that owing to the lecturer's then success he had been requested to re-deliver it before St. Jude's congregation on March 10th. (Applause.) He further remarked that it gave him great pleasure to see so much interest awakened on the subject of Astronomy and Astro-Meteorology.

The following were then declared duly elected associates: Rev. W. Henderson, Glencoe, Ont.; Messrs. H. Wray, Sydney Ussher and J. S. Vipond, all of Montreal.

Nominated for election at next meeting: Messrs. R. Bickerdike and J. Parratt, Montreal.

Letters relating to Association matters were read from Vice-Presidents Mansill and Test and Councillor Murray.

Applications for information regarding the Association and its work were received from the Rev. G. Blair, Prescott, Ont. and W. H. Bartholomew, Vanessa, Ont.

The need of an organ for the Association was then discussed at length, the President reading a number of letters urging the immediate commencement of *ASTRONOMY AND METEOROLOGY*, to contain, amongst other matters, full reports of Association meetings. It was finally decided to support Mr. Smith in any venture of this nature he might see fit to undertake.

Meteorological reports were received and taken as read from Messrs. G. W. Redman, Indiana; R. Bueglass, Ont.; T. Birt, Utica, N.Y.; W. S. Wood, Wisconsin; M. T. Cole, Malone, N.Y.; L. Headley, Illinois; E. W. Barnard, Vermont; John S. Horne, New Hampshire; A. M. Moore, S. C., etc.

Notice was called to the verification of the theories of astro-meteorologists, who had looked for earthquakes at the two last ecliptic conjunctions of the sun and moon in August and February.

Mr. Smith made some remarks on the planets in March, directing members' attention to the visibility of Mercury, then about  $5^\circ$  N.W. of Venus in the evening sky, as well as the visibility of the asteroid Vesta, like a star of the sixth magnitude in the constellation *Virgo*, about  $10^\circ$  N. of Jupiter. He also directed attention to the occultation of *Alpha Tauri* (Aldebaran) by the moon on the evening of March 29th. Disappearance at 7.44 and reappearance at 8.50 p.m. Washington time.