TRANSACTIONS

OF THE

Astronomical and Physical Society of Toronto

FOR THE YEAR 1890-91,

INCLUDING FIRST ANNUAL REPORT.

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and azimuth and collimation, are obtained by a reversal; that a single pair of observations eliminates the instrumental error in all, and that the cross-axis level may be read at the observation and error of level calculated. A similar construction might be adopted for equatorial mountings for observations of celestial objects other than the sun.

ANNUAL MEETING.

The twenty-fourth and annual meeting of the Society was held on the 24th of February, the President in the chair.

Several communications were received and read. The Committee on Publication presented a draft of the annual volume, which was ordered to be printed.

The Secretary in his report reviewed the history of the Society during its first year, and stated that there was every reason for congratulation in the steady growth of the members, in the increasing interest, and the practical work accomplished. The outlook for the future was bright and promising.

The Treasurer's statement showed a substantial surplus.

The Librarian with his report presented a catalogue of over one hundred volumes in the library of the Society, many of which are of great value, received as donations from Observatories and kindred Societies.

The following officers were elected for the year 1891-92: President, Charles Carpmael, M.A., F.R.S.C., F.R.A.S.; Vice-President, Andrew Elvins; Treasurer, D. J. Howell; Corresponding Secretary, G. E. Lumsden; Recording Secretary, Thomas Lindsay; Librarian, A. F. Miller.

The President then delivered his first annual address to the Society. He referred to the work which had been done during the past year, noticing particularly the discovery by Prof. Pickering of a class of binary stars too near each other to be separated by the most powerful telescopes in existence, or which we can ever hope to construct. This had been accomplished by photographing the spectra of the stars. Some stars had been found to show the lines of the spectrum double and single alternately, and at equal periods of time. The explanation of this fact was that two stars revolve around a common centre of gravity, and lie nearly in the plane of the line of sight. One must be approaching when the other is receding, and thus the wave-length of light com-

ing from the two stars is increased in one case and diminished in the other, whilst when both are on the line of sight the lines are not displaced at all, as the wave-length of both are in that case unchanged by the motion. Vogel, in Europe, had arrived at the same conclusion, and the mass of the components, their distance and rate of motion, had been determined. Schiaparelli, the well-known observer in Italy, who has been observing the inferior planets, Mercury and Venus, during the last ten years, had arrived at the startling conclusion that both rotated on their axes and revolved in their orbits in the same period of time. This, the President thought *a priori* likely in the case of Mercury, but gave reasons for thinking it unlikely in that of Venus. Duner had been applying the spectroscope to the sun, and his results confirmed the observations of Carrington and others in relation to the more rapid motion of the sun's equatorial regions than towards the poles. He used the atmospheric lines as points of comparison, as their wave-length is not affected by the sun's rotation, and thus overcame the chief difficulty which the other observers have had to encounter. During the year, fourteen planetoids had been discovered. The planetoids are now so numerous that it is not easy to keep track of them. Six comets had been discovered, but none of them were large enough to be objects of much interest to the general public. Langley had been engaged in getting observations of the temperature of the moon's surface, and had concluded that the temperature of its hottest period is not above zero centigrade, or the freezing point of water, which gives a show of color to the possibility of the theory of Mr. Peal, of India, that the lunar surface is covered with snow and ice. The President referred to the growth of the Society as most encouraging, and spoke of its future as being one full of promise and hope.

During a conversation which followed, Mr. Elvins stated that Mr. Peal's theory was not new, as he (Mr. Elvins) had published the same views in a paper on "The Moon, its Motion and Physical Constitution," in the *Astronomical Register* in 1869.

The proceedings of the Society for the first year of its existence, were then brought to a close by adjournment.