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Report of the Meeting of the Society held on Wednesday, 26th November 1913.

THE Ordinary Monthly Meeting of the Society was held on Wednesday, the 26th November 1913, in the Imperial Secretariat (Treasury Buildings), at 5 P.M.

In the absence of the President, Mr. P. C. Bose was moved to take the Chair.

The minutes of the previous meeting were read and confirmed.

The following list of presents received by the Society since the last meeting was announced and the thanks of the Society were then accorded to the donors :—

1. Monthly Notices of the Royal Astronomical Society (Vol. LXXIII, No. 9)—Supplementary number.
2. Journal of the British Astronomical Association (Vol. XXIII, No. 10).
3. Monthly Weather Review for June 1913 published by the Government of India, Meteorological Department.
4. Rivista Di Astronomia E Scienze Affini—Ottobre 1913.
5. Annuaire De L'Observatoire Royal De Belgique.

Chairman.—I will ask the Secretary to read Mr. Henry Hart's paper on "The Shifting Ecliptic." (*Mr. Hart's paper*).

Chairman.—I would propose a vote of thanks to Mr. Hart for his paper.

Chairman.—I would now ask Revd. Ridsdale to read his paper on "The Perturbation of the Moon's Orbit."

Mr. Ridsdale.—I may mention that as my paper is a very lengthy one I intend to read only one-half of it at this meeting and will give you the other half at the next meeting. (*Mr. Ridsdale's paper*).

Chairman.—If any of the ladies and gentlemen here present have any remarks to offer or points to discuss, will they kindly do so?

Mr. Raman.—I think we are all greatly indebted to Mr. Ridsdale who has given us a remarkable and interesting summary of the existing knowledge of the Moon's motion. Mr. Ridsdale has expressed himself in a very intelligible manner, and I do not think we can see such a clear exposition in the books. These give us either a formidable array of mathematics or a scrappy collection of facts without the dynamical explanations which can lend interest to them.

One point which struck me was that in giving a brief list of mathematicians who have advanced the Lunar theory, we should not omit the name of Professor Ernest Brown, who of late years has brought the processes of mathematical calculation practically to a state of perfection. I am sure we all look forward with interest to hear the second half of Mr. Ridsdale's paper.

Chairman.—We may return a vote of thanks to Mr. Ridsdale for his interesting paper and look forward to hear the other half of his paper at our next meeting.

Mr. Raman.—There is one thing I should like to say before the meeting is adjourned. During the recent holidays (7th to the 10th November) I took a trip to Bankura for the second time to meet the Revd. Mr. Mitchell and discuss the results of our work on Jupiter during the present apposition. During my visit I took the opportunity of making some observations with Mr. Mitchell's 5" Cooke refractor and these bore out what I mentioned at our annual general meeting of this year regarding the excellent performance of the instrument. I had some very striking views of Jupiter on all

four evenings. Incidentally I may mention that Jupiter has shown very remarkable features during this year. The great red spot was in conjunction with the south tropical disturbance, and its drift and the accompanying phenomena are a revelation to the observer who has not previously worked on the planet. At the edge of the North Equatorial band and inside the Equatorial zone we have had a series of remarkable oval arch-like structures. Mr. Mitchell and myself propose to contribute two or three papers to the Society's meetings during the current session giving the results of our observations of the planet.

While at Bankura I also made some observations of Saturn late in the evening when the planet was fairly high up in the sky. Using the 5" Cooke, not only was the crape ring an easy object, but for nearly one hour while the definition was perfect, I made out Encke's marking in the A ring and held it steadily for practically the whole period. Encke's division, as you know, is regarded as a difficult object which even a 10" refractor often fails to discover. The conditions for observing it are, however, at present very favourable. The rings are widely open and the planet can be had at a sufficiently high altitude for the best definition. In fact, viewing Saturn with a refractor of a little less than 3" aperture some time ago, I made out Cassini's division, and this when I had never before viewed the planet with any telescope of larger aperture.

Since my return to Calcutta from Bankura I have been doing some work on Saturn with the 7" Merz refractor belonging to the Observatory of the Indian Association for the Cultivation of Science. My observation of Encke's division was easily confirmed. Besides this, I distinctly saw two markings in the B ring. These were, however, very faint and seemed to indicate some kind of a definite structure in the B ring. Further observations of the planet are being continued. I have only to add as a reminder to those of our members who possess telescopes of more than 3 or 4 inches aperture that Saturn is now a fascinating object worthy of study.

Mr. Simmons.—May I remark that I have a 3" and I have failed to discover the division that Mr. Raman says he saw with a telescope of that aperture.

Mr. Raman.—The instrument is a 2 $\frac{7}{8}$ " inch refractor manufactured by Ducretet of Paris. Though rather an old one, it is in a very good state of preservation and the object glass is practically perfect. Using this instrument I was able to see the Cassini's division quite easily.

Mr. Ridsdale.—I was going to say that there were 3" telescopes in existence long before Cassini's division was

discovered. I think it all depends on a person knowing a thing is there; he can then find it easily.

Mr. Simmons.—I understood from the advertisement when I bought the 3" telescope that I would be able to see the division, but I may say in spite of all my hopes I failed to see it.

Mr. Raman.—I can safely say that should any one care to have a look through my $2\frac{3}{8}$ inch telescope, he would see the line of division between the A and the B rings clearly enough this year.

Chairman.—As far as my experience goes, I think it all depends upon the excellence of the night. You cannot see anything on a night when the sky is muddy and the definition poor, but the point of discussion is that Mr. Raman saw the line of division with a $2\frac{3}{8}$ inch refractor and Mr. Simmons was unable to see it with a 3 inch; I think this was probably due to the state of the atmosphere.

The meeting was adjourned.

The Shifting Ecliptic.

BY MR. HENRY HART.

In these notes it is attempted to explain some effects of the changes which occur in the obliquity of the ecliptic. The angle of the obliquity is not a constant. It is at present diminishing by a calculable fraction in every second of time, being at the rate of $\cdot 468$ seconds of arc in every year. In the present year, 1913, it is calculated to be $23^{\circ} 27' 2\cdot 17''$ as shown in the Diagram A G, and at the above rate of diminution, the obliquity will entirely disappear in the course of 180,389 years, when the ecliptic will coincide with the celestial equator, and the celestial north pole will be the pole of the ecliptic (Diagram B H). Presuming the procession of the equinoxes continues at the present rate during this period, Polaris will again be the polar star when the ecliptic and the celestial equator are on the same plane, as one