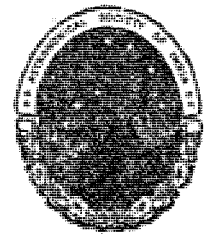

The Journal of the Astronomical Society of India.

VOL. II.] SESSION 1911-1912. [No. 5.

Report of the Meeting of the Society held on Tuesday, the 27th February 1912.

H. G. TOMKINS, C.I.E., F.R.A.S., *President*, in the Chair.

P. N. MUKHERJEE, M.A., F.S.S., *Secretary*.

The Secretary having read the minutes of the last meeting which were duly confirmed, the following presents to the Society were then announced and a vote of thanks was accorded to the respective donors :—

Notices of the Royal Astronomical Society, Vol. LXXII, No. 2.

Journal of the British Astronomical Association, Vol. XXII, No. 3.

Bulletin of the Astronomical Society of Bercelona, Dec. 1911.

Ri Vista Di Astronomia for January 1912, Anno. VI, No. 1.

Monthly Weather Review of the Alipore Observatory for Sept. 1911.

Bijnan, Vol. I, No. 1.

" Prithivir Puratatta " by Mr. B. B. De.

The election of the following members at the last meeting of the Council was then confirmed :—

The Hon'ble Mr. P. C. LYON, C.S.I., I.C.S.

Mr. W. A. LEE, F.R. MET. S.

,, C. B. SEN, B.A.

,, H. SUR, B.A.

,, W. D. MCLAREN.

The President then announced that a telescope which had been given to the Society by Dr. Harrison had arrived and would be put upon the roof of the building of the Imperial Secretariat Building for the benefit of the members who might have occasion to use it for purposes of observation. A notice would be circulated when the instrument was ready for use. It had to be slightly altered to make it correspond to the latitude of Calcutta. He next announced that the second public lecture under the auspices of the Society would take place at the Town Hall on the 1st of March 1912 on the subject of the Moon. He asked members to let their friends know that these lectures were free and to bring their friends with them. He hoped to see a large number present.

Another matter which the President wished to bring to the notice of members was that at the suggestion of Mr. Evershed, one of the Vice-Presidents, the Council had registered the address of the Society at the Head Office of the Telegraph Department. The registered address of the Society was " Astronomy, Calcutta."

The President then called on those members present who had not done so to sign the Roll of the Society and he then formally admitted them.

The President.— The first paper on our list this evening is a mathematical one. We had one of this class last month which we greatly enjoyed and we have another this evening. I would ask Mr. Ghose to read his paper on Lunar Measurements.

Mr. Ghose then read a most interesting paper on the measurement of the heights of lunar mountains.

The President.—In the case of mathematical papers it is extremely difficult to give on the black-board all the steps by

which the results are arrived at and to put all that one wishes to say in mathematical form. It is only possible in dealing with papers of the kind to indicate generally what has been done, and to learn the details by closer study by members when they have the paper in print. This, I am sure, we shall many of us look forward to doing with Mr. Ghose's interesting paper. While listening to what Mr. Ghose has said, however, it struck me that he brought out clearly some of the principles on which he worked, and particularly the method by which he got his heights by measuring the distance of the first appearance of a peak as a bright spot from the line joining the cusps. Regarding the other method described by him, of course the altitude of the Sun is merely a form of putting the angle at which the Sun is shining at the extremity of the shadow of the mountain. If we have this and the length of the shadow we can get the exact height of the mountain. About measuring this shadow, however, there is a difficulty which arises from the point of view from which we measure it. Supposing one mountain threw a shadow directly towards us, we should then not be able to measure it at all. It could be directly measured only if the shadow were thrown normal to our line of sight. Any position between them would result in a foreshortening of the shadow and our measurement would be too small in every case. As a matter of fact this occurs, and not only so, but the perspective differs at every lunation depending on the libration of the Moon. We therefore have to allow for this in our measurements, and Mr. Ghose, I notice, has devoted a large portion of his paper to this. It is a part of the problem which I personally shall examine with interest, and I do not doubt that many others will do the same.

There may be some questions that members may like to ask with regard to this paper.

Col. Burrard.—Regarding the measurement of the shadow, what radius is adopted ? I take it that the surface of the Moon varies in distance from the centre, some parts being high and some low. Again, suppose we take the case of the Sun at mid-day in Calcutta ; it will throw a shadow due north. How do you take account of this in measuring the height of the mountain ?

The President.—I think that Mr. Ghose takes the mean surface with the mean radius of the sphere. Naturally, one must have some level from which to measure these mountains. On the Earth we have sea-level, but on the Moon

there are no seas, and consequently the heights have to be measured above the plain on which the shadow falls.

Col. Burrard.—It seems to me you are measuring the length of the shadow at the place on which it happens to fall, and if the foot of the mountain happened to be on a plateau, as, for instance, Thibet, the result would not be a measure comparable with those of other heights.

The President.—You mean that the height would be shortened. The height of the mountain would be so many thousand feet above the level of its foot. This would also make a slight difference in the Moon's radius for the purposes of the calculation. Could Mr. Ghose tell us what he has adopted ?

Mr. Ghose.—I have taken a mean radius.

The thanks of the meeting were then awarded to Mr. Ghose for his interesting paper.

Mr. Banerjee next read a portion of a paper he was writing on the Habitability of the Planets.

The President.—One or two points struck me while Mr. Banerjee was reading his paper. The first of these was the method adopted of expressing the power of a telescope as bringing the Moon or a planet within so many miles of the Earth. This has always seemed to me to be a very inaccurate gauge to the power of an instrument. Doubtless, if there were no atmospheric conditions to be taken into account, it might convey some meaning, but it is perfectly certain that what is seen with an instrument said to bring the Moon to a distance of 150 miles is very different from what would actually be visible if the Moon were placed at that distance and viewed with the instrument. The more scientific way, and the way which conveys the power of an instrument at once to anyone accustomed to use one, is to express it in aperture and focal length, and then say that magnification of a given number of diameters was used. Another point was the rotation of Venus. Mr. Banerjee adopts the long period of 224 days, but as a matter of fact the question whether the period is that time or only about 23½ days is one of the most debated in that branch of astronomy. There is a good deal of evidence for the shorter period and one or two observers have quite recently held that view. The doubt has arisen from the extreme difficulty of detecting a definite feature on Venus.

Mrs. Voigt.—I thought there was an atmosphere around the planet.

The President.—Which planet are you referring to ?

Mrs. Voigt.—Mercury. Am I not right in thinking that an atmosphere was visible at the time of the transit of Mercury over the Sun some years ago ?

The President.—Perhaps Col. Burrard could tell us. I am not sure whether he was present at the observations of the transit of either Mercury or Venus.

Col. Burrard.—I was not present, but I do not think there was any evidence. I don't know, however, that it is denied that there is an atmosphere round the planet.

The President.—Perhaps you are referring to what is known as the black drop which occurs at the moment of contact ?

Mrs. Voigt.—Yes ; I think I am.

The President.—That is simply an optical phenomenon and not connected with an atmosphere on the planet. There is an atmosphere on Jupiter and Venus, on Mars very little, and on Venus probably very dense. It is very difficult to discern any features on the last planet.

I may perhaps make one other remark in connection with the statement in Mr. Banerjee's paper that life exists on every planet. I do not think it is probable that beings such as we know on the Earth exist on any of the planets. Take the planet Neptune. It is generally supposed to be not yet cool. Uranus is not very different. I do not think there is direct evidence to indicate life on any planet, though it is speculated that it may exist on Mars and perhaps Venus.

The thanks of the meeting were then accorded to Mr. Banerjee for his paper.

The President then showed a series of fine photographs of the spectrum of the Sun taken at the time of a total eclipse. The spectra were taken at different times during the eclipse and were of the Sun at mid-eclipse, the flash spectrum and some others. They were taken by Mr. Evershed of the Kodai Kanal Observatory and kindly sent for the Society to see.

The photographs were greatly admired and a hearty vote of thanks was accorded to Mr. Evershed for sending them.

The President.—I think we are very fortunate in having a Vice-President who sends us these slides.

The meeting was then adjourned until the 26th March 1912.