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Report of the Meeting of the Society held on Tuesday the 27th June 1911.

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

The usual Monthly Meeting of the Astronomical Society of India was held in the Imperial Secretariat Buildings (ground floor) on Tuesday the 27th June, 1911, this being the last monthly meeting of the present Sessions.

The proceedings were opened by the President, and Mr. U. L. Banerjee read the minutes of the previous meeting, which were duly confirmed.

The President then announced the various presents given to the Society in the shape of astronomical journals and other papers, and the thanks of the Society were accorded to the donors.

The election of the following members by the Council was then confirmed :—

1. MR. SAMUEL N. ELIA TAINBY.
2. MR. C. R. RAMASWAMI.

The President then mentioned the names of Mr. W. Leatham, I.C.S., and Mr. Haran Chandra Banerjee, who had been elected by the Council as Auditors, to audit the accounts of the Society after 30th September, 1911, and submit their report before 31st October, 1911, which was confirmed.

The President next read out the names of the members of the Council proposed by the Council for the Session 1911-1912, mentioning separately the names of the Directors of

Sections, the Treasurer, the Editor and the Librarian proposed for appointment by the Council, as well as those of the President, the Vice-Presidents, the Secretaries and other 10 members, who are to be elected by ballot at the next Annual General Meeting. He also suggested that a few additional names might be proposed by the members and intimated to the secretary. Mr. U. L. Banerjee proposed the name of Mr. S. C. Mitra, M.A.

In mentioning the names of the Directors of Sections the President explained that it is proposed to abolish the posts of the Director of the General Section and the Director of Photography, and combine them with the Scientific Secretary, as their functions are identical.

The first paper of the evening was a note read by Mr. Rakshit on the August Meteors, his remarks being fully illustrated by lantern slides.

The President.—The shower is during the month of August. Have you got the date of the shower?

Mr. Rakshit.—Yes, as I explained it will be about the 10th to 12th of August.

A vote of thanks was duly returned to Mr. Rakshit for his interesting note.

The next paper of the evening was one contributed jointly by Mr. Rakshit and Mr. A. T. Mitra on the Solar Eclipse of October, 1911, and was read by Mr. Ramaswami; lantern slide pictures fully illustrating and explaining the notes were exhibited.

The President.—The eclipse will be rather a fine sight in Calcutta, and it is a form of amusement that any amateur might take up to observe this eclipse. There are several points to be observed. One of the most interesting features of an eclipse of the sun is to see whether the edge of the shadow is fairly smooth or not on the moon. The mountains stand out on the edge of the shadow and one gets some sort of an idea of what they will look like seen in profile. Of course the mountains in these circumstances are never seen like the mountains on the disc. Another interesting feature of a solar eclipse is the image of the partially eclipsed disc which is projected through the small apertures between the leaves of a tree. The whole question will be familiar to those who have ever practised pin-hole photography. Photographs have been obtained of these crescent shaped patches of light on a white ground during an eclipse. It is interesting and the result is very pretty. Those are the two main things, and then of course there are the timings of the eclipse and the size and position of the shadow, which, as you see in the

diagram, changes as the eclipse proceeds. It would be an interesting thing to draw a sketch fully representing the path of the shadow during the eclipse. Anybody who has a telescope can do it by projecting the image of the sun on a white screen. I hope we shall have a number of observations taken and sent in by members towards the end of October. The paper which has just been read gives the practical timings between 7 and 9-30 a.m., but people who are at the place can check the results. These two gentlemen have practically worked out the thing to the nearest minute, and have also been at some pains to make the slides, etc.

A hearty vote of thanks was accorded to Mr. Rakshit and Mr. A. T. Mitra for the pains and trouble they had taken over the paper, and a vote of thanks was also returned to Mr. Ramaswami for reading it.

Dr. Harrison then showed and explained some photographs of the sun received from Mr. Evershed, Director of the Kodaikanal Observatory, and read a note on the same. He explained his remarks by diagrams on the blackboard. There is cool hydrogen up above at the top of the larger prominences, the lower portions send light through the cooler top layers, and hence the light is absorbed and we see the dark outline of the prominence.

Take for example a spirit lamp flame with a little common salt put in it. The flame will give a yellow light due to the presence of sodium. Now suppose that we place near the flame some cooler vapour of sodium, the same vapour that was present in the flame. A series of waves will emerge from the lamp. The colder sodium vapour absorbs these waves and corresponds to the top of the prominence. No waves in this case pass through the cold sodium vapour. They are completely absorbed. That being the case, the effect will be darkness, and you will see nothing if you look at the hot sodium flame through the cooler layer of vapour. In the case of the prominences the ray of light passes through the cooler vapour of the same substance which exists at the top of the prominence and gets wiped out. This is the general outline of the explanation of the black streaks.

The President.—There is one point on which I should like to ask a question. In some of those photographs which have been taken, in the centre there appear bright prominences and in others dark ones. Is there any reason for this?

Dr. Harrison.—The only thing I can think of is that only in the case of the higher prominences do we get this absorption effect.

The President.—It may interest members to know that Dr. Michie Smith, if not the first, was one of the very earliest of astronomers to get photographs of the prominences in this way. I recollect that in 1907 he showed some slides in England at the Royal Astronomical Society there.

A hearty vote of thanks was accorded to Mr. Evershed for the photographs, and a vote of thanks was duly returned to Dr. Harrison for so ably illustrating and explaining his remarks regarding the pictures.

The President.—We have something of a sensation now in the shape of some pieces of a meteorite sent in by H. H. the Maharaj Rana Bahadur, Sir Bhowani Singh. I am sorry I have forgotten the letter, but will leave Mr. Rakshit to read the message and Dr. Harrison to explain and remark on this find.

Dr. Harrison.—It appears that the Society has got hold of a jewel in the pieces of this meteorite. I went down to the Survey of India and showed the pieces to Mr. Tipper and Dr. Christie. They announced it to be meteoric matter of the carbonaceous type and exceedingly rare and valuable. It is certainly the only fall of this nature discovered in India. There are only 8 other falls known of this type and Mr. Tipper kindly gave me a list of them. [Read out list.] The South African specimens, which are in the possession of the Geological Survey of India, are a little bigger than these. The specimens here to-night resemble the 8th find more than any of the others. The probability is that the meteorite fragment is almost pure carbon. The question arose the other day whether it may contain some of the nickel iron alloy. These things do contain this alloy very often, and as the present specimen shows a metallic looking crust in some parts, it probably contains a little nickel or iron. It is pretty clear that a small portion of the fragments ought to be sacrificed for analysis. We weighed it and found its weight to be 3 grammes, and we made a rough estimate of its volume. There are three problems which have to be decided. How much are we prepared to sacrifice for analysis? Then the next question is how to ascertain its specific gravity. It must not be put in water or any liquid for fear of oxidation or other chemical action so one is somewhat handicapped in trying to find its specific gravity. It was thought it might be possible for an artist to make a clay model of it and get the specific gravity in that way. I next tried to make an estimate of the magnetic permeability of the thing by comparing it with a magnet of known moment. It is certain that there is a certain amount of iron or magnetic alloy in it, but only very little indeed. The

third question is as to what we are to do with it. I think that probably the Council will recommend that it be handed over to the Geological Survey for the Museum, where there is already a fine collection of meteorites.

The President.—I think the first thing we have to do is to have this analysis pushed through, and we also have to decide as to what we are going to do with it. Dr. Harrison suggests that we make it over to the Museum and have it labelled as a present from us. I think we may leave that for the Council to decide. In the meantime I think we had better have the analysis carried out.

A hearty vote of thanks was accorded to the Rana Bahadur, and a vote of thanks returned to the officers of the Geological Survey for their courtesy in giving information about this meteorite, also to Dr. Harrison, amid much applause. The meeting was then adjourned to the next Annual Meeting which takes place on October 31st.

The Solar Eclipse of October 1911 as it will be observed in India.

BY A. T. MITRA AND B. M. RAKSHIT.

We shall have an eclipse of the sun in the morning hours of the 22nd of October next. It will be visible from all parts of India, though the magnitude of the maximum phase will vary considerably. Thus for example the obscuration will be a quarter of the sun's diameter at Madras, a third of it at Bombay, two-thirds of it at Calcutta, three-quarters of it at Darjiling, and seven-eighths of it at Dibrugarh. In order to understand the cause of this difference we have to bear in mind that a solar eclipse is caused by the interposition of the moon between the observer and the sun. Just as an isolated patch of cloud sometimes cuts off the sun from view either wholly or in part, so the dark opaque moon sometimes comes between us and the sun, causing a complete or partial obscuration of his disc. Now, we have frequently noticed that a small patch of cloud does not conceal the sun from view equally for all; that while some are in the shadow others stand in sunshine. In the same way while the moon obscures the sun completely for some, for others it causes a partial obscuration, there being for some others no obscuration at all. Behaving, in an eclipse, like a patch of passing cloud the moon comes up to the sun, covers it and then moves away, presenting different views to different observers.