Eleventh Annual Meeting of the Toronto Astronomical Society held in the library of the Can. Institute Thursday evening Jan 10th 1901. ✓

The President - Mr Geo. E. Lumsden occupied the chair during the business part of the meeting which owing to the special nature of the meeting was limited to the reading of the minutes & the election & nomination of new members. ✓

The new members elected as Associates were Dr P. H. Bryce M.A., M.D. of Bracondale and Mr R. W. King of 503 Markham St City. ✓

The following gentlemen were nominated as Associates:-
Mr Garnet N. Meldrum of Montreal by Messrs Lumsden and Miller,
Mr Charles B. Petry Isabella St - City by Messrs Miller & Lumsden,
and Mr John Bertram of 9 Walmer Road by Messrs Tyson & Lumsden

The President then read a letter from Dr Garratt M. Smith regretting that increasing years prevented him from taking an active interest in the Society and offering the Society as a gift his splendid 3" refracting telescope. The announcement of the Dr's generous donation was received by the members present with much

satisfaction. ✓
Mr The President also read a letter from a young lady seeking information in regard to the reversing layer at the suns surface.
The president then called upon Vice-president Stupart to take the chair during the reading of the paper of the evening.
In accordance with the custom of the Society the programme was supplied by the president and another splendid paper was added to the collection of annual addresses preserved in the transactions of the Society.
Mr Snowden chose as his subject "The threshold of a new Century" and gave a luminous account of the Astronomical work and workers of the past century concluding with an optimistic outlook into the century which is opening before us. Messrs Patterson and Harvey in moving and seconding a vote of thanks to the President took the opportunity of expressing the general appreciation of Mr Snowdens work not only in the paper in question but also in the Society at large.
In response to a general demand Mr Ehrins spoke a few words and urged the members to do their best and so make the success of the Society assured;

PROGRESS OF ASTRONOMY.

President Lumsden Speaks Before the Astronomical Society on the Last Century's Achievement.

A very pleasant social gathering was the annual meeting of the Toronto Astronomical Society last night in the Canadian Institute, at which there were present a large number of ladies and gentlemen. Refreshments were served during the evening in the library, lantern views were shown in the lecture room and a magnificent series of photographs of the moon were exhibited in one of the anterooms. The President, Mr. G. E. Lumsden, F.R.A.S., delivered his address, which he called "The Threshold of a New Century." It consisted, for the most part, of an able and interesting review of the discoveries in astronomy and astronomical physics during the nineteenth century. Among the topics touched upon were the undulatory theory of light, the development of solar chemistry through the analysis of the spectrum, the achievements of photo-astronomy, the period of sun spots, the discovery of the planetoids, all of which were referred to the past century. At the close of the eighteenth century astronomy was confined to the solar system; now it comprehended so many branches that it was not possible for any one man to grasp the whole of them. In conclusion the President spoke of the glorious possibilities of the new century in relation to astronomical achievements, and said he looked forward hopefully as to the future career of the society. Mr. J. C. Paterson, in a very felicitous speech, moved a vote of thanks to the President for his interesting lecture, and the resolution was seconded by Mr. Arthur Harvey, and supported by Provost Macklem and Mr. A. Elvins, who expressed in highly complimentary terms the pleasure and instruction they had derived. The President, in responding, referred incidentally to the prospect there was of our scientists being able to predict the weather, not only from day to day, but from year to year and decade to decade. When this was brought about, our agriculturists would be able to direct their operations with the wisdom that came of foreknowledge. He hoped that it would reserved for Director Stupart to be one of those who would confer this inestimable blessing upon mankind. The absence of the Minister of Education, the Honorary President, through an attack of grippe, was keenly regretted.

GAVE A TELESCOPE.

Dr. Larratt Smith's Generous Gift to the Astronomical Society.

The Toronto Astronomical Society held its tenth annual meeting last night. The officers of the organization were elected some weeks ago, but last night was made the occasion of a social reunion with refreshments.

President Geo. E. Lumsden delivered a special address appropriate to a meeting held on the threshold of a new century. He enumerated and explained the numerous discoveries in the stellar universe achieved during the nineteenth century, and spoke optimistically of the possibilities of further great discoveries during the twentieth century. His paper revealed an immense amount of personal research and knowledge.

An event which aroused great enthusiasm was the presentation to the society of Dr. Larratt Smith's famous three-inch telescope, one of the finest instruments of the kind in Canada. Suitable arrangements for its custody will be made hereafter.

~~Dr Ellis~~ Dr J. C. Street Macklem Provost of Trinity College a newly elected member also spoke a few words expressing his strong interest in Ast. The President then resumed the chair and invited the members and their friends to partake of refreshments and enjoy a little social intercourse. Down Stairs Mr H. J. Howell pleased the visitors with an exhibition of the lantern slides of the society; & in the library the splendid collection of lunar photographs in the possession of the Society attracted much admiration. It was the generally expressed opinion that the ~~meeting~~ evening had been spent in a manner both pleasant and profitable.

J. Edw. Maybee
Recorder

Approved by the
G. Dawson
P.M.

PRESENTED WITH A TELESCOPE.

Dr. Larratt Smith's Instrument Given to the Astronomical Society.

At the tenth annual meeting of the Toronto Astronomical Society, held last night, President Geo. E. Lumsden delivered a special address appropriate to a meeting held on the threshold of a new century. He enumerated and explained the numerous discoveries in the stellar universe achieved during the nineteenth century, and spoke optimistically of the possibilities of further great discoveries during the twentieth century. His paper revealed an immense amount of personal research and knowledge. An event which aroused great enthusiasm was the presentation to the society of Dr. Larratt Smith's famous three-inch telescope, one of the finest instruments of the kind in Canada. Suitable arrangements for its custody will be made hereafter.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday Evening Jan 22nd 1901 with the President in the chair.
After the meeting had been called to order the president asked for an expression of opinion from the society as to the advisability of holding a meeting in view of the death of the Queen.
Several members took occasion to express the general regret at the sad news just received but out of consideration to Mr Harvey and the members who had assembled to hear his paper on the "Sun" it was deemed inexpedient to postpone the meeting.
The minutes of the Annual meeting were then read and confirmed.
The following gentlemen nominated at the previous meeting were elected as Associates Messrs John Bertram 9 Walmer Road City, Charles B. Petry Isabella St. City and Garnet A. Meldrum Prince Arthur St Montreal.
Mr Albert E. Horton of 64 Howard St. City was nominated as an associate by Messrs Dunsden & Miller.

The President then read several letters expressing approval of the Society's programme and a letter from Mr Sarratt W. Smith asking the society what arrangements would be made by the society for taking over the telescope lately presented to the society by the Mr.
The matter was left in the hands of the Council to be dealt with as they saw fit.
There had been many regrets expressed that the Society had lost the services of Mr Thomas Lindsay as Recorder and the feeling found tangible expression at this meeting in the presentation to Mr Lindsay of a stop watch as an expression of the esteem in which Mr Lindsay and his services were held by the Society
In response to the ~~verbal~~ congratulatory remarks of the President and Mr Ellis ~~as~~ Mr Lindsay expressed the opinion that he himself had been the chief gainer in the past from his association with the society, and that it was a new idea to make a presentation to any one as a recognition of the faithful manner in which

he had taken advantage of his opportunities ~~of~~ for intellectual profit.
The paper of the evening then followed.
Mr Harvey after discussing briefly the immense importance of the sun to us and describing briefly the fascination of the subject, dealt very exhaustively with the probable conduction of the sun and the nature of observed solar phenomena.
Much attention was given to the question of the probable electric nature of many of these and also to the relation between terrestrial electric and magnetic disturbances and sun-spots.
Some discussion was raised by Mr Harveys paper after which the President declared the meeting adjourned

J. Edw. Maybee
Recorder

approved

ASRONOMERS ASSEMBLED

To Hear Mr. Harvey's Paper on "The Sun"—Mr. Lindsay Honored.

The regular meeting of the Toronto Astronomical Society was held on Tuesday evening at the Canadian Institute. Out of consideration to the lecturer of the evening, Mr. Arthur Harvey, F.R.S.C., and the members of the society who had assembled to hear his paper on "The Sun," it was deemed inadvisable to adjourn the meeting, though the society put on record its deep regret at the sad news of the passing away of the Queen.

A pleasing feature of the evening was the presentation to Mr. Thomas Lindsay of a stop watch as a recognition of ten years of faithful service as recorder.

Star Thursday Jan 24th 1901

A pleasing feature of the last meeting of the Astronomical Society was the presentation to Mr. Thomas Lindsay of a stop watch as a recognition of ten years of faithful service as Recorder. In response to the President's words of appreciation, Mr. Lindsay expressed the opinion that he himself had been the chief gainer in the past from his association with the society, and that it was a new idea to make a presentation to him as a recognition of the faithful manner in which he had taken advantage of his opportunities for intellectual profit.

Globe Friday Jan. 25th 1901

A meeting of the Council of this Society was held on the 2nd instant, at three o'clock.

It was moved by Mr.Paterson, and seconded by Rev.Mr.Atkinson that in view of the decision to purchase a telescope costing $250, the appropriation ($100) for printing the Report of 1900, be reduced to $50.
Carried.

Moved by Mr.Howell and seconded by Mr.Miller that the President be empowered to make such arrangements with the owners of the telescope referred to as shall be necessary for its purchase for this Society.
Carried.

Moved by Mr.Paterson and seconded by Mr. Miller, that the copy of Duncan's "Midnight Sky," for sale by Mr.Britnell, be purchased for $1.50.
Carried.

Moved by Mr.Paterson and seconded by Rev.Mr. Atkinson, that Council be authorized to accept Dr.Larratt W.Smith's telescope at a meeting to be called for the purpose, and to present to Dr.Larratt W.Smith an engrossed expression of the Company's thanks.
Carried.

Moved by the Rev.Mr.Atkinson, seconded by Mr. Miller, that as some evidence of the Society's appreciation of Dr.Larratt W.Smith's munificent gift, he be named and enrolled a Patron of the Society.
Carried.

The Curator was requested to ascertain the probable cost of placing the Sir Adam Wilson telescope in a proper state of repair, and to inquire as to the kind of tripod best adapted for the Larratt W.Smith telescope.

Accounts for a rheostat ($7.50) and in connection with the recent Annual Meeting ($10.50) were directed to be paid.

Charles P. Sparling
for J.C.M.

Acting Recorder.

Council Chamber, February 2nd, 1901.

The Regular meeting of the Toronto Astronomical Society held Feby 5th 1901 in the Canadian Institute Building.

The meeting was called to order at 8.15 p.m. by the President, in the Chair.

Minutes of the previous meeting were read and confirmed.

A communication was read from the Vice-President Mr R. F. Stupart re showers of Meteors.

A report of the meeting of the Council held on the 2nd inst. was read

Moved by Mr Lindsay and seconded by Mr Geo. E. Pursey "That the Report from Council be adopted." Carried

Mr A. E. Horton who was nominated at last meeting as an Associate, was declared by the President as a duly elected member of the Society.

The Librarian reported the receipt of several volumes and numbers since the last meeting.

Mr D. J. Howell reported on the condition of the Wilson Telescope.

Mr G. Pursey reported on Sun Spots.
Mr M. Weatherbe reported on the Corona at Sunrise this morning.

Mr. A. Elvins reported seeing last week a pillar of light similar to one recently mentioned by Rev. R. Atkinson

Messrs. Weatherbee, Lumsden and Miller reported observations during the last two weeks.

Mr. A. Elvins then read his paper on "Earth Accretion".

Mr. Thos Lindsay read Mr. W. D. Denning's paper on the Planet Jupiter and his markings.

The meeting then adjourned.

Chas R. Darling
Acting Recorder

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday Feb 19th 1901 with the President Mr G. E. Lumsden in the chair. No business of routine character was before the meeting with the exception of the Librarians report.

Under the head of observations Mr G. G. Pursey reported the disappearance of a sunspot observed previous to the last meeting.

Mercury was reported as being visible in the West just after sunset.

Mr Weatherbe reported Mars as being more than halfway round his loop and that he will stop in a ~~few~~ few weeks and turn back.

Mr Elvins called attention to an article by Prof. Simon Newcomb in the Feb. number of the Astro-Physical journal on the periodicity of sun-spots. and articles ~~by the same writer~~ on the Solar Corona and the production of an artificial corona, and ~~an article~~ on the flash spectrum seen in eclipses.

The meeting had been specially announced as of a popular character and it was gratifying

to note that the room was well filled.

The programme was provided by Mr J. A. Paterson who spoke on "Taurus and the Pleiades", Rev R. Atkinson who spoke on the Spring Constellations, Mr Andrew Elvins who spoke on the "Zodiacal light", and the President who filled the place of absentees and spoke on "The Belt of Great Suns from Orion to Vega" and on "The Milky Way; its Clusters, nebulae and Coal-sacks."

The matter treated by the speakers was illustrated by a number of new lantern slides which materially aided in making the evening both profitable and pleasant to the audience.

After the meeting the President invited those present to partake of refreshments in the adjoining room.

J. Edw. Maybee

Recorder

ASTRONOMERS ARE EXCITED.

contributed by Mr. Lumsden

New First Magnitude Sun in a Part of Perseus.

Astronomers have been in a state of pleasurable excitement by the announcement of the discovery of a new star in the Constellation of Perseus. The assumption was, so the president (Lumsden), of the Astronomical Society, told The Mail and Empire, that the Nova was some star of ordinary importance, but when night came, and it was observed that a splendid first magnitude sun had burst out and was blazing in a part of Perseus, where two or three nights earlier there apparently was no star at all, the interest at once awakened was unprecedented in Toronto, as the event is one of the very highest importance, and with which the sudden appearance of a great comet, though more imposing, is as nothing. Telescopes and spectroscopes were at once directed to the new star which was found to be nearly, if not really, as bright as Capella, the splendid star in Auriga, not far to the east of the Nova, which it greatly resembles in colour.

All should watch the new star from night to night as it may increase in brilliancy before it fades away, that is, if it disappears as all other Novae have done. Those who know the polar constellations will recognize the star in an instant, as it is situated very nearly in the centre of the three well-known stars in Perseus, viz., Alpha, Beta (Algol), and Epsilon. There can be no mistaking it, as it is much brighter than any star in its neighbourhood. Those who do not know the constellations may easily find the Nova by drawing an imaginary line from the belt of Orion northerly across the pleiades to a point, roughly speaking, about the same distance from the pleiades as the pleiades are from Orion. This line will pass a little to the west of the characteristic stars of Perseus above mentioned. These stars form a triangle, almost in the centre of which the new star is shining. To the naked eye the star is quite as bright as any first magnitude star.

The constellation passes overhead, at Toronto, but a little to the north, about 7 o'clock. As seen in the opera-glass and in the telescope, the Nova is a beautiful white star with a tint of pale yellow, and perhaps a fringe of faint blue or purple light. In the spectroscope, it is a puzzling object, as it presents a continuous spectrum crossed by very many dark lines in the green, blue, and purple regions, instead of bright lines, as observers would be inclined to expect, having regard to theory. The spectrum shows many, and some strong hydrogen lines. It should be noted that this is the first appearance of a first magnitude new star since the invention of the spectroscope. The event is therefore doubly interesting, if only on this account.

As has been said, new stars of the brilliance of Nova Persei have been most rare. Probably only three are certainly known. The first of these appeared in Scorpio in 138 B.C., and suggested to Hipparchus the desirability of making a chart of the heavens for the purpose of comparison and reference. The second was discovered by Tycho Brahe in 1572, and for one year formed an object of interest in Cassiopeia; this star exceeded Sirius in brightness, and for a short time was visible in daylight. The third appeared in Ophiucus in 1604, and was observed by Galileo and Kepler.

The appearance of the new star is an event of the first importance, and it is safe to conjecture that to the very last moment it will be the subject of intermitting observation and study, telescopically and spectroscopically. Every change in colour and brightness will be most carefully noted, and those who are able to pay some attention to the star will enjoy advantages of the rarest character, as new stars of the first order are among the rarest of astronomical phenomena.

negligent.

Toronto Astronomical Society.

At its last meeting the Astronomical Society engaged in a popular study of the stars, devoting special attention to spring constellations. The large number of visitors testified to the attractiveness of the programme. Nothing was known at the time of the Nova in Perseus, which has added a subject of surpassing interest to that constellation. It is curious to note that the two previous Novae shone out in this part of the sky, Nova Aurigae in 1891 and Nova Andromadae in 1885. The society meets Tuesday evening, March 5th, in the Canadian Institute, and the new star will come in for special discussion. All interested are heartily invited to attend. An illustrated paper will also be read on "Greenwich Observatory XIX. Century" by Mr. T. Lindsay.

Globe Feb 26th

Young Liberal Club.

The New Star in Perseus.

Mr. A. F. Miller writes:—Though decreasing in brilliance, the Nova is still much brighter than any other star in its vicinity. Its pale yellow color and stellar appearance in the telescope remain unchanged. The spectrum has, however, undergone a remarkable transformation, now showing three very vivid wide bright lines superposed upon the continuous spectrum. These bands are situated near the central region of the visible spectrum, and appear to be separated by dark spaces. The brightest seems to have its centre coincident with the blue-green hydrogen line H beta. The least refrangible band lies towards the position of the chief helium line, though I do not assert that it coincides therewith; it is the second brightest line of the series. Intermediate between these bright bands is another, its position being near b4. This may well be the nebula-line at L 518.3, which, as I pointed out in 1894, almost exactly coincides with a bright line in the spectrum of "[illegible]" argon. I regret the uncertainty of these positions, but the cloudy state of the sky made exact observations impossible. The star was all the while hidden by a layer of cloud, and only found and followed by an equatoreal. There can be no doubt, however, that wonderful changes are taking place in this strange stellar object, the outer gaseous layer of the star having enormously augmented in density, and being raised to vivid incandescence.

blue

The New Star in Perseus.

Mr. A. F. Miller writes:—On Feb. 27 and 28 I found this star still superior in brightness to Alpha Persei. Its spectrum forms a most interesting study, and I have now definitely proved by comparison the existence of the bright-line spectra of hydrogen and helium, superposed on a continuous spectrum with dark lines such as we find in an ordinary star. I only detected the red hydrogen line on the evening of Feb. 27: it was not previously visible, though I looked for it very carefully. This red line is now very vivid, and I cannot doubt that its increase in intensity is due to actual changes occurring in the star's surface layers. The characteristic bright line of helium also seems to have increased in brightness, though it is much more delicate and narrow than the hydrogen series. The two green lines described before I have not yet positively identified, but I have no doubt of finding one or both coincident in position with the lines of gaseous nebulae. Thus we see a star exhibiting the whole bright-line series characteristic of, for instance, such a body as the Orion nebula. There can be no doubt that Nova Persei is giving astronomers the most wonderful object lesson in stellar evolution which it has been possible to study since the invention of the spectroscope.

Meeting of the Council held Lab. Apt. March 2nd 1901 in the Canadian Institute
Present Messrs Seimsden (Pres) Mussson, Sparling, Miller, Elvins Atkinson, Kidout, Paterson, Harvey & Mayhee.
In view of further information received as to the Steinberger-Hendry telescope the Council rescinded its instructions to the President ~~and~~ to purchase the instrument and resolved that after making full enquiries and without undue haste a 4" telescope should be purchased
The report of the Auditors Messrs Miller & Atkinson was read by the former. Various recommendations were made for systematizing the business and financial affairs of the society. The report was as received and adopted and the special recommendations approved.
Sundry small accounts were also passed.
At 4. P. M. the Council adjourned to the large meeting room to meet Dr Barratt. M.P. Smith. As a report of the proceedings I attach the following newspaper item

Council Mar 1 to 1901

Council Meeting March 2nd (con.)

FOR SCIENTIFIC RESEARCH.

The Astronomical Society Receives the Gift of Dr. Larratt W. Smith's Three-Inch Telescope.

The Council of the Toronto Astronomical Society on Saturday afternoon last formally received from Dr. Larratt W. Smith, K.C., the gift of his valuable three-inch refracting telescope. The gift was accepted by President Geo. E. Lumsden in appropriate words, after which Mr. J. E. Maybee was called on to read an illuminated address expressing the feelings of the society towards Dr. Smith.

Messrs. J. A. Paterson, M.A., Arthur Harvey, F.R.S.C., Andrew Elvins and Rev. Robert Atkinson also spoke in appreciation of the valued services rendered the society in past years by Dr. Smith and of his continued interest in the society as evinced by his generous donation.

In reply the doctor, who was visibly affected, regretted much that increasing years prevented him from taking the active interest in astronomy that he had once done. He felt that his instrument was now placed where it would do better service than in his own hands, and assured the society that he would always treasure the kind words he had received and would follow carefully the proceedings of the society as fully as they could be gleaned from the daily press.

Globe 9 March

J. Edw. Maybee
Recorder

Summer Hill.

Dear Mr. Lumsden

In reply to your note of the 25th inst. just received, I shall have much pleasure, in meeting the Council of the Astronomical Society, any at your Meeting on Saturday next, at the Canadian Institute.

I have to tender the Society my warmest acknowledgements, for this kindness, in having elected me a Patron of the Society, in whose interests, I am so deeply concerned.

Believe me
Dear Mr. Lumsden
Yours very truly
Larratt W. Smith

Tuesday Evening
26 Feb. 1901

This is the draft of the Address which was typed by the Officers of the Society;

Toronto
January 1901

Larratt W. Smith, Esq., D.C.L., Q.C.,

Ex-President of the Toronto Astronomical Society,

Dear Sir:-

We desire on behalf of the Toronto Astronomical Society to ~~reiterate~~ return to you our sincere thanks for your very many acts of kindness in the past to the Society and its members, all of which they bear brightly in their memories and now these have reached a culmination in your munificent gift to them of your fine telescope. Those gifts are ever the most precious which the giver makes precious - and thus it is with yours. We regret that your state of health has prevented you from associating yourself with us as of yore in wooing the fair Muse of Science, but we rejoice in being assured that you maintain a great and enduring interest in ~~astronomical~~ Scientific research, both in study and in practice, and that thus your life in relation to science is a running stream and not a stagnant pool. It was a great pleasure to all of us when your official connection with the Society remained unbroken; but since it has been broken it seems as if like a ray of white light it has become ~~severed~~ colored with the sparkle of more than one memento of your friendship. We accept from you with special gratitude the telescope which you have yourself in the past so profitably used and which you have now so kindly presented and we feel that we are not only made happy now by the possession of the gift, but we will be made happy for years hence by the memory of the giver.

It is our earnest prayer that the Father of all may tenderly keep you in these later years and guide you up the great altar stairs to a yet higher life and that you will continue to appreciate the truth that he most lives, who does the most, feels the noblest and acts the best.

We are ever

~~Ever~~ Yours Most Sincerely,

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday ~~Feb~~ March 5th 1901 with the President Mr Geo. E. Lumsden in the chair
The minutes of the previous meeting were read and confirmed.
The President reported receiving letters from Messrs Petry and Scales relating to the purchase of a telescope by the Society.
The report of the meeting of the Council held Sat. afternoon March the 2nd was read and adopted. Mr Hamilton was then elected an Associate of the Society.
Mr J. M. Collins presented the librarians report, noting the receipt of a number of important contributions.
Under the head of observations Mr S. S. Pursey reported two double spots as breaking out on the sun ~~sist~~ and a small spot with numerous faculae on ~~the~~ a later day.
Mr Miller gave an exhaustive report of ~~the~~ his observations of the new star in Perseus. This star was first noted by Mr Miller on Friday eve. the 22nd ult. and was then slightly brighter than Capella.

In eleven days it had faded to the 2nd magnitude. In the first place the star presented an ordinary continuous stellar spectrum crossed with the usual dark lines. By the 26th of ~~March~~ Feb. the spectrum had undergone a remarkable change the continuous stellar spectrum ~~being~~ having a bright line spectrum superimposed upon it. The bright-lines of hydrogen and helium were readily identified but two green lines could not easily be placed. Mr Miller believed them to be the green lines of a gaseous nebula which in 1864 he had stated to be in all probability the lines of "blue" argon.
Mr Millers conclusion was that the new star, from some as yet unknown cause, was expanding into a nebula, the progress of the change being ~~readily seen~~ marked by the gradual fading of the continuous spectrum at first exhibited.
Mr Ridout referred to the oft mooted popular theory that the novae in this region of the sky were periodical returns of the "Star of Bethlehem

March 1, 1901.

My dear Sir,

The spectrum of Nova Persei as observed Feb. 27 & 28 shows a continuous band crossed by bright nebulous bands; one red (C) one yellow D (sodium probably) and four others in the "blue". These D. bands not formally identified by other reports known to be the hydrogen bands. At first the spectrum did not contain the bright bands as reported by others. Such they reports no displacement of lines, if I correctly read a mutilated dispatch. First reports a double spectrum containing both dark and bright bands as was seen in the case of Nova Aurigae 1892. The star has reddened as it fades, and the red end of the spectrum is becoming more prominent. The best summary

of the theories of Nova that
of is in Scheiner's Astronomy
Spectroscopy Frost's translation

It is more probable
such objects are faint stars
have flared up thro' some c
Tropha rather than new c
the prediction that "the elem
shall melt with fervent he
seems true suggestive.

Yours truly

. Winchell

Rev. Robert Atkinson.

Toronto.

Rev R. Atkinson read a letter from Mr Winslow Upton of Brown University Providence on the spectrum of the New Star from which it would appear that our own Mr Miller had made greater progress in the spectrum analysis of the light of Nova Persei.

Mr Miller further remarked the resemblance of the spectrum of the new star to that of Nova Aurigae of 1892.

A curious feature of the star as seen in the telescope was that in focus it appeared yellow; out of focus one way, red; out of focus the other way blue. This is due to the different refrangibility of the components of its spectrum. The probable parallax of the star was about .006 seconds.

Mr Lindsay then gave a very full account of the changes and additions made in the Greenwich Nautical Almanac for 1884.

Unfortunately the meeting was adjourned before the paper was finished as the members present were unaware that only two or three pages of matter remained for presentation.

The following were the leading points treated. These were to be supplied by Mr Lindsay but up to date (Mar 19th) the resumé has not been received.

Toronto Astronomical Society.

The last meeting of the Astronomical Society proved of unusual interest. The new star in Perseus was under discussion, and everything as yet known about the star was elucidated. Mr. F. A. Miller, a member of the society, discovered the star independently of Dr. Anderson, but later than that astronomer. Mr. Maybee also noted the presence of the new visitor without being aware of its previous discovery. According to Mr. Miller, the star appears to be rapidly expanding into a nebula, in its light the nebular spectrum being superimposed on the continuous stellar spectrum. The gradual fading of the latter indicates the progress of this magnificent example of stellar change. Mr. Miller's research work on the new star is of sufficient importance to warrant the issue of a special bulletin by the society. The remainder of the programme was supplied by Mr. Thomas Lindsay, who discussed the important changes made in the Greenwich Nautical Almanac in 1853. In that year mean solar time was substituted in the almanac for the true solar time hitherto used in the calculations, and in other ways the almanac was improved, corrected and enlarged.

Toronto Globe

Before the meeting adjourned Mr W. B. Musson moved seconded by Rev. R. Atkinson that the ~~Club~~ Society shall henceforth publish its transactions in the form bulletins with the idea of ~~at once~~ giving publicity to researches such as Mr Millers before they had become matters of ancient history. Carried The meeting then adjourned

J. Edward Maybee
Recorder.

President

The danish meteorologiske office
Det danske meteorologiske Institut.
Bestyreren. The director No

Kjobenhavn, den Copenhagen, March 2th 1901.

Dear Sir,

In reply to your letter of February 14th I feel much pleasure in sending you the report I have read before the Congrès International de Physique "regarding the danish mission to Iceland to make observations upon the Aurora. - One remark is to be made concerning the notice upon a continual spectrum included in the spectrum of the Aurora (Vapl: „Dans la partie du spectre contenant les raies .... maximum plus ou moins accentués"). After our return from Iceland we have proved that the light does not belong to the Aurora but arises from the reflection in the atmosphere of lunar light or other light not connected with the aurora borealis.

The part of the spectrum containing the lines, whose wave-lengths are confined between 426 μμ and 337 μμ is absolutely identical with the corresponding part of the cathode-spectrum of azote; in short time I shall have the pleasure to send you a paper upon the matter.

The researches we have made in Iceland are now continued in north Finland by Lieutenant Le Cocq, who has communicated me by telegraph, that he has photographed a new line in the ultra violet part of the auroral spectrum; the wave length is about 316 μμ.

Yours very truly.

Adam Paulsen

Dr. E. E. Lamsden
President of the Toronto
Astronomical Society.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday March 19th 1901 with the President Mr Geo. E. Saunders in the chair.

The minutes of the previous meeting were read and confirmed. Letters were read from Adam Paulsen of the Danish Meteorological Office sending a report of the work done by the Danish expedition to Iceland to make observations upon the Aurora; from the Premier of Ontario permitting the Society to become the custodian of an orrery and celestial globe belonging to the government; from Mr C. A. Young promising 2 ~~copies~~ copies of the Princeton eclipse reports. Letters were also read from the Librarian of McGill University and Mr Wadsworth of Allegheny asking sets of transactions and promising an exchange.

Mr Munson then moved seconded by Mr J. M. Collins that the treasurer be authorized to transfer the Societys account from the Can. Bank of Commerce (Market Branch) to Imperial Bank of ~~Canada~~ Cor. Queen and Yonge Sts, to be held to the joint a/c of the Pres. & Treas. Carried

Mr Miller reported that Nova Persei was practically stationary at the 4th Mag. The spectrum was practically unchanged in its nature but the bright-lines or bands were finer and thinner. The Blue-green hydrogen line was the brightest, the red came next. The line of Helium was still quite visible but the violet hydrogen was very faint. The continuous spectrum was still visible. The changes in the spectrum since the last meeting point to a continuation of the process of expansion in the Nova.

Sir Norman Lockyer in a note in "Nature" reports that the bright-lines have dark counterparts on the more refrangible side just as in Nova Aurigae and this appearance might be caused by the presence of two bodies of unequal brightness the darker approaching us and the brighter receding.

Mr Wetherbee reported no sun-spots visible. On Sat the 16th a previously noted spot had broken up into three.

PERSONAL:

Toronto March 12, 1901.

My dear Mr. Lumsden:

The Premier desires me to say in reply to your note of the 11th ultimo that he is willing that your Society may become the custodian of the orrery belonging to the Government, which is in the Legislative Library, and of the celestial globe, which is in the Bureau of Mines.

Yours very truly,

L. A. Renaud

Premier's Secretary.

George E. Lumsden, Esq.,
Pres. Astronomical Society,
Toronto.

Mr George Rideout reported his visit to Cambridge Observatory and his kind reception by Sir Robert Ball an honorary member of the Society.
Mr Rideout described the interesting photographic work going on there with an equatorial coudè.
Mr Arthur Harvey presented a note asking Mr Miller to investigate spectroscopically the variability of the planetoid Eros. Mr Miller reported his instruments as being inadequate.
Mr Harvey also stated that from the report of the Belgica Antarctic expedition he had constructed a chart showing the general synchronism of Aurora Australis and Borealis: Mr Arctowski the meteorologist of the expedition had after studying the chart placed on Mr Harvey the further task of establishing the absolute synchronism of aurorae at homologous positions north and south. Mr Harvey therefore asked the cooperation of the society in securing accurate observations of aurorae occurring during the year 1898 Nov.

The programme for the evening comprised a series of papers and addresses on the planet Mars, illustrated by new lant. slides Mr J. E. Kidout discussed the ellipticity of the planets orbit and also elliptical planetary orbits in gneral.
Mr Phillips read a short paper on the planets satellites Phobas & Deimais.
Mr Wetherbe explained the formation of the apparent loops in the planets path in the heavens.
Mr Sunsden briefly discussed the polar caps of Mars, and the gneral telescopic appearance of the planet.
The attendance was good and much interest was aroused by the socialy good popular evening.
After the meeting adjourned a short time was spent in social intercourse and refreshments were served

Approved. J. Edw. Maybee
G. E. Saunders, Recorder
President

The New Star in Perseus.

Mr. A. F. Miller writes:—Owing to the frequent recurrence of cloudy nights there were but few opportunities for observing this object during the past two weeks. Careful observations were, however, made as often as possible, the investigation being of considerable interest and importance. The star has continued to diminish in brightness, though the decline of its light has been neither so steady nor so rapid as during the earlier stages of its career. Between March 9 and 16 it remained almost steady at the 4th magnitude, on March 22 it did not exceed the 5th magnitude, and on March 28 I rated it as 5.5. Thus it is nearing the limit of visibility to the unaided eye, a very rapid decline, for when I first noticed it, 37 days ago, it was one of the brightest stars then visible. Though its light emission has so decreased, it is still quite possible to study the spectrum with a compound spectroscope, and the bright lines of hydrogen, helium and other gases shine with such brilliance as to strongly support the view that the relatively dense stellar body, which at first gave rise to a continuous spectrum, has since undergone enormous expansion. The continuous spectrum is now very faint, but a bright band (or probably a group of bright lines) has become visible in the blue, being first noticed on March 22 and seen with certainty on March 28. This bright band occupies approximately the same position as a group of bright lines recorded in the spectra of the temporary stars of 1866 and 1876.

Globe April 2nd 01

— some say sodium

— not visible on Sunday 31st
star not red but rather yellow

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening April 2nd with the Pres. Mr Leo. E. Lumsden in the chair.

The minutes of the previous meeting were read and confirmed

A letter was read from the Chairman of the Toronto Public school board promising the use of the Rosedale school grounds for open air meetings.

Mrs A. S. E. White was then duly elected an associate of the Society.

The librarian reported the receipt of a no. of valuable periodicals and exchanges

Under the head of observations Mr A. F. Miller ~~th~~ reported the result of observations of Nova Persei substantially as in his letter in the Toronto Globe of April 2nd last.

(Here read clipping on P. 113)

It was noted that Professor Hales thinks that the lines ascribed by Mr Miller to Helium were really the lines of Sodium

Mr W. B. Musson put the query "Is there no other possible explanation of the doubling of the lines of Nova than the ordinary one that two bodies were present?"

According to some authorities pressure was competent to cause doubling.

Mr Elvins read a note from "Nature" where it was shown that in one case the doubling of the lines indicated a motion in the line of sight of 400 kilometers per second of the hydrogen and only 48 of the calcium, the lines of other elements showing intermediate speeds. This seemed to show that either numerous bodies were present which was not probable or else that the shifting of the lines was not due to motion in the line of sight.

Mr Wetherbe reported Orion Neb. as being a good object for observation early in the evening and Sat. and Jupiter in the early morning.

The President reported an observation of Mars and exhibited a drawing of the planet made by Mr Hilker at his 4" telescope

Mr R. F. Stupart was then called upon to read a paper on the relation between sun-spot periods and rainfall.

Mr Stuparts observations indicated a pulse of increased rainfall at sunspot minimum and also two or three years after S. S. Maximum

It also appeared at such times as the suns temperature was highest our average temperature in Canada was lowest and vice-versa. Mr Stupart gave a very full presentation of his subject which was listened to with much interest by all. Mr P. H. Bryce Mr Ellwins and Mr Harvey and others discussed the paper at some length. The meeting then adjourned.

Approved,

J. Edw. Maybee
Recorder

G. E. Greenwood
President

THE WEATHER A YEAR AHEAD.

Remarkable Advance Made—The Influence of Sun Spots.

Meteorological observers in several parts of the world are at present working on a curious and interesting problem—the relation of the phenomena known as sun-spots to the annual rainfall. Sir Norman Lockyer, Director of the Solar Physics Observatory, South Kensington, has been conducting certain investigations relative to the connection, if any, between sun-spots and periods of drouth in India. He has found a marked coincidence between certain recurring conditions with regard to the sun-spots and the amount of annual rainfall, and by further investigation he hopes to be able to predict the years of unusually large rainfall, and, in consequence, the years of famine.

Investigations of a somewhat similar nature have been made by Mr. R. F. Stupart of the Toronto Observatory. A period covering the last 70 years has been scrutinized, and Mr. Stupart has found that the rainfall is at its heaviest in Ontario at or just after the periods of minimum sun-spots, and also about three years following the periods of maximum sun-spots. When the sun-spots are at their maximum the rainfall is light. The periods since 1830 are as follows :—

First minimum sun-spot period, 1834—Maximum rainfall 1836.

Second minimum sun-spot period, 1844—Maximum rainfall 1844-45.

Third minimum sun-spot period, 1856—Maximum rainfall 1858.

Fourth minimum sun-spot period, 1867—Maximum rainfall 1868-69.

Fifth minimum sun-spot period, 1878—Maximum rainfall 1878.

Sixth minimum ~~rainfall~~ sunspot 1889—Maximum rainfall 1890-91.

The maximum sun-spot periods have been 1837, 1847, 1860, 1871, 1884 and 1894. In them, with the possible exception of 1884, the rainfall has been considerably below the average. At no time has there been a heavy rainfall at the time of or until within two years after a maximum sunspot period.

The present is a time of minimum sun-spots, and Mr. Stupart accordingly ventures to forecast a period of heavy precipitation. It will be seen that this is an important advance, and progress in this line of research may lead to a great increase in the powers of forecasting now enjoyed by observers of meteorological conditions. Local and indeterminable influences will, of course, prevent detailed forecasts.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute on Tuesday evening April 16th with the President- Mr Geo. E. Saunders in the chair.
Rev. Mr Atkinson reported that the predictions of phenomena published for him by the Toronto Globe had excited considerable interest in various quarters.
Mr Miller reported Nova Persei as having fallen in brightness to the ~~10~~ 4th magnitude. It appeared to have lost its reddish tint. In the bright line spectrum the red Hydrogen and Helium lines had faded-out. Three bright-lines were however easily seen, the blue-green Hydrogen line H beta and the two lines Mr Miller had put down as ~~the~~ belonging to a nebular spectrum. Of these supposed nebular lines one was brighter than the other. According to some authorities these lines were lines of iron or magnesium. The continuous spectrum was still faintly visible.
Mr Weatherbe reported the sun as being clear of spots.
He also reported the star clusters in Canar and Hercules and the double cluster in Virgo as being well placed for observation.

The planet Mars was reported as being in the town of its loop. Messrs Harvey and Simmoden reported having observed the double star Scorpii.
The evenings programme was supplied by Messrs Atkinson Elvins, Simmoden & Mayhew.
Mr Atkinson gave a very clear and popular exposition of the changes in the aspect of the Moon due to libration.
Mr Elvins discussed the deformed craters often met with on or about the sea floors.
Mr Simmoden described some interesting objects for observation and also gave some account of the most important lunar mountain ranges
Mr Mayhew discussed briefly the lunar rills their nature and probable origin.
The meeting then adjourned and a short time was spent in social intercourse over a cup of tea and light refreshments

J. Edw. Mayhew
Recorder

C. Harvey,

G. E. Simmoden,
President,

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday eve. April 30th 1901 with the Pres. Mr Leo. E. Saunders in the chair
The only routine business was the reception of the Librarian's report after which Mr Blue of Ottawa was elected the representative of the Society at the coming meeting of the Royal Society of Canada.
Under the head of predictions of phenomena Venus was reported as being behind the sun and Saturn and Jupiter as being a fine sight in the early morning.
Under the head of reports of observations Mr J. R. Collins reported having seen a comet-like object in Taurus which was also seen by Mr Lindsay.
Mr Miller reported that Nova Persei had still further declined in brightness being now of about the 9th mag. and just visible on the 28th inst. with a large field glass.
The evenings programme was entirely biographical and proved of more than ordinary interest.

Miss L. A. Hunt paper treated of Caroline Herschells life of devotion and self-sacrifice into the interests of her brothers (Sir William) astronomical work.
Mr Collins ably presented the claims of Michael Faraday to be considered as the greatest of the pioneers in the field of electricity and magnetism.
Mr A. T. Miller gave a thorough an interesting account of the life and work of Wollaston who did so much to prepare the way for the work subsequently done in spectrum analysis by Fraunhofer. Kirchoff and Huggins.
Albers proved a congenial subject for Dr Watson and the moral was clearly pointed out that ~~not~~ good work may be done in Astronomy by those actively engaged in professional or business life.
Albers is better remembered as an astronomer rather than as a physician and especially by the work done by him in the discovery of the minor planets filling the gap between Mars and

Jupiter.
While all the papers were of great value the opinion was generally expressed that Miss Clents paper fully established the right of our lady members to stand on an equal footing with the gentlemen in all the privileges and duties of membership.
Refreshments were served in the adjoining room after the adjournment of the meeting.

J. Edw. Maybee
Recorder.

Approved,
G. Truesdow,
Presidents.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening May 14th 1901 with the President Mr Leo. E. Jemsden in the chair.
The minutes of the previous meeting were read and confirmed. The following associates were then ~~elected~~ nominated William Tedford by Messrs Mayhee and Jemsden and Wiston Wetherbee by M. Collins & Jemsden
The report of the Council meeting held Friday evening May 3rd was received and adopted. The principal item in this report was the order given to Messrs Cooke & Sons per C. B. Petry for a four inch telescope without stand, the price laid down in Toronto to be $195.
No observations of the new comet in Taurus were reported as the visitor is at present too close to the sun
The attendance of members and visitors was large and the programme most interesting.
Mr R. Dewar gave a very thorough paper setting out all that is known or surmised of the nature of comets

Mr A. F. Miller presented a paper of much scientific value on the spectra of comets showing the changes in the nature of a comets light caused by its varying distance from the sun.
An intersting well written paper on Halleys comet was sent in by Mr Joseph Pope of Ottawa.
Halleys comet is particularly interesting as by the investigation of its recorded appearances Halley was enabled to extend the demonstration of the law of gravitation to cometary orbits and to predict with tolerable accuracy the next appearance of the now celebrated comet bearing his name. Victoria day 1910 will be specially marked by the next appearance of Halleys comet.
Mr J. A. Paterson kept an attentive audience till after ten o'clock listening to an address on the changes made in cometary orbits by the attraction of the larger planets of the solar system and on the changes similarly caused in the appearance of some comets.

The meeting adjourned shortly after ten o'clock.

Approved,

E. Thomson,
President.

J. Edw. Mayhill
Recorder

COUNCIL MEETING.

A meeting of the Council of this Society was held in the library on the evening of Friday, the 3rd instant, and the following business was transacted :

The President was authorized to ascertain whether M.Camille Flammarion and M.Loewy, Director of Paris Observatory, and Professor C.A.Young, Director of the Princeton Observatory, would accept Honourary Fellowship in the Society.

It was moved by Mr.Z.M.Collins, Librarian, seconded by Mr.A.Elvins, and resolved, that Mr.D.J.Howell's tender for books to be purchased for the Society's library be accepted, and that an order in accordance with the list hereto be given.

It was moved by Mr.A.F.Miller, seconded by Mr. C.P.Sparling, and resolved, that the tender of Mr.C.B. Petry, (Charles Potter), for a telescope, be accepted, and that such telescope be a Cooke and Sons four-inch-instrument, with bright black brass tube, finder, dew-shade and cap, three astronomical eye-pieces, (powers 60, 120 and 300), one solar eye-piece and three sun shares, in varnished pine case, no stand, the price in Toronto to be $195.

On motion of Mr.D.J.Howell, curator, seconded by Mr.W.B.Musson, Corresponding Secretary, accounts for lantern-slides ordered since the first of the year, for the illustration of certain papers, and amounting to $ were ordered to be paid.

Mr.D.J.Howell, Curator, was authorized to ascertain the cost of mounting the Larratt Smith telescope on a suitable wooden tripod, and also the cost of putting the Sir Adam Wilson reflector in working order, and providing for it a more suitable stand.

A copy of the correspondence in respect of these matters is hereto annexed.

The Council decided that hereafter it would hold its regular meetings on the second Saturday in each month, at three p.m.

All of which is respectfully submitted.

Recorder.

Toronto, May 14th, 1901.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening May 28th with the President Mr Geo E. Lumsden in the chair

Mr Howell who had been appointed to investigate the condition of the Sir Adam Wilson telescope reported that the instrument had been taken to Mr A. T. Millers house and that Mr Miller would look into the condition of the mirror.

Mr Howell also reported that Mr Pursey had donated to the society a tripod which might perhaps serve as a stand for the instrument.

Mr M. B. Musson was instructed to send a report to the Royal Society of Canada

The president reported having received a letter from Mr Arch. Blue relating to the recent meeting of the Royal Society of Canada at which he represented our Society.

A letter had also been received M. Camille Flammarion expressing interest in the society and seeking members for the French society.

Messrs Ledford & Wetherbee were duly elected to associate

membership and the
name of Mr R. S. Duncan
was proposed by Messrs Dunsden
and Miller;
The librarian reported the
receipt of numerous journals
and other publications.
Under the head of Predictions
Mr Dunsden called attention
to the fact that the moon
now culls further to the
south than in winter
Mr Wetherbe stated that
Saturn & Jupiter will
shortly appear so close to-
gether as to be visible in
the field of a telescope at
the same time.
A slide by Mr Wetherbe
of the recent large sun-
spot group was thrown
on the screen. The changes
in the spots were very
rapid and as observed
on the morning of May 23rd
changed visibly in a very
short time.
Mr Butler reported perfect seeing
that day and also on the
evening of the 24th inst.
The evenings programme
was opened by a very
clear careful presentation by Prof. De Lury
of the method of determining
the size and shape of the
earth

De Lury

The regular monthly meeting of the Council of this Society was held in the library on the 8th instant, and the following business was transacted :

On the motion of Mr.J.A.Patterson,seconded by Mr.A.F.Miller,a Committee,consisting of the President, Mr.Miller and Mr.C.P.Sparling,was appointed and authorozed to obtain full information and details respecting the proposed founding of the journal to be substituted for the Annual Report of the Society,the Committee to report before any further action is taken.

On the motion of Mr.Arthur Harvey,seconded by Mr.Sparling,the Curator and Mr.Miller were authorized to do whatever is required to put the Sir Adam Wilson Telescope in effective working order. The report on the subject handed in by Mr.Miller is herewith annexed.

The President was authorized to obtain from the School Board permission to use the grounds of the Rosedale School whenever required during the summer months.

Several small accounts for books and lantern-slides were approved and ordered to be paid.

All of which is respectfully submitted.

J. Edw. Maybee

Toronto,June 11th,1901. Recorder.

The President followed with a description of the methods devised for weighing the earth notably the plan followed at Schiehallion in Perthshire. A short time was then spent in reminiscences of Donatis Comet by Messrs. King Weatherbe and others. This object with a tail of some 90° in length was so remarkable a phenomenon that it had impressed itself very deeply in the minds of all who saw it. The meeting then adjourned

J. Edw. Maybee
Recorder.

Approved,
W. Frenson.
President

Regular Meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening June 11th 1901 with the President Mr. Geo. E. Lumsden in the chair.

The President reported receiving a letter from M. Maurice Loewy director of the Paris Observatory accepting the honor of nomination as an Honorary Fellow of the Society; & from Dr Brashear announcing that he was engaged on a special $3500 ~~telescope adapted particularly for Spectroscope~~

The same letter also reported the splitting of a 37" mirror for a reflecting telescope which the Prof. was boring for mounting as a Cassegranian reflector.

+ The President had noted a particularly bright dark side on the moon on March 24th and wrote to Prof Abbey asking an explanation. In reply Prof Abbey replied that it had received the special attention of himself and Prof. Kimball and, ~~about~~ sent an article that would appear in the ~~Astronomical~~ Weather Review Journal On Causes of Variability in Earth Shine

+ Now being responsible intention of Government to purchase a fine Astronomical outfit for a new observatory at Ottawa

Report on the condition of the "Sir Adam Willson Telescope."

To The President and Council, Toronto Astronomical Society.

Some time ago I was asked by you to make an examination of this instrument, which had been lying unused at the Toronto Observatory since last summer, and regarding which some very unfavorable statements had been made by various members of the Society. On May 23 I went with Mr. Howell to the Observatory and was shown the telescope, which had been left by the Society in a shed, but which Mr. Stupart afterwards had taken into the Observatory Building. As it was impossible to do anything with it there I arranged with Mr. Howell to have it sent to my house: This was done on May 31st. I examined the instrument that evening and found it in a very unsatisfactory condition, being not only quite out of adjustment but evidently much worse for the careless usage which it had received at the hands of those members to whom it was formerly intrusted. Anyone who can remember the telescope as shown to the Society just before its delivery to Sir. Adam Willson by the maker must now feel shocked to find evidences of careless neglect visible on both tube and stand. The telescope has evidently been left out in all weathers, so that the neat appearance which it once had is quite destroyed. As we are aware, the eyepieces originally belonging to it were lost during one of its transfers from house to house, and when put into my hands there was but one apology for an ocular, quite undeserving of the name however. The tube has several great dinges, evidence of falls which it has suffered in time past. The finder eye-piece has disappeared, probably gone in search of the oculars belonging to the telescope proper.

I brought the instrument into my workshop and took out the mirors, so as judge of their condition, on which, of course now depends the whole question of what had better be done. I was glad to find the large speculum has preserved its polish in spite of the careless way it has been treated: It only shows some scratches due to wiping with a rough duster, which seems to have been the method followed by some former user. There are a few small spots due to dust and damp, but these are unimportant. The cell is a very imperfect affair, and seems to have been fixed up in a temporary way with a thin wooden bottom. These defects, however, only affect the adjusting and collimating: Otherwise the cell is very excellent, <u>for above all things it does not seem to strain the mirror.</u> I found the diagonal very much stained through being fingered on the surface by careless hands thrust in to move it. Being speculum-metal it would have been impossible to polish it without destroying the figure; I therefore washed it with pure alcohol on a swab of surgical cotton, and had the satisfaction of finding that by this means I had removed the tarnish, without in the least affecting the surface, which was thus restored to a fine polish without any rubbing. I then put the mirrors in place and adjusted them; this work in the case of the large speculum is very difficult, on account of the way its cell has been patched up with a wooden bottom; however after many trials I got the line of collimation to coincide with the axis of the tube, and proceeded to test the telescope on stars. The focussing arrangement is not well contrived, and the diagonal is inserted so near the apex of the cone of rays that a huyghenian eyepiece has to be pushed almost into the body-tube to come to focus. If the instrument ever had a sliding eye-tube that is gone now, and its place is taken by an ill-turned wooden ring with a brass bushing fixed tight in the eye end. The wretched ocular sent with the telescope fits this bush, but has a scratch on the eye lens which makes it useless for viewing stars

Fortunately I have a small positive ocular belonging to my own telescope, and this I employed in testing the Society's instrument. I had expected that the mirrors would turn out fairly decent; I was not prepared to find them so good as they are: Both mirrors appear to be of high excellence, and give fine definition even on bright stars; I divided several close doubles and found the definition most excellent. The light-gathering power is less than I expected, not being accustomed to speculum metal mirrors, which evidently absorb much light.

The stand, which gives a parallactic motion, is not very convenient, as only stars some degrees south of the zenith can be reached; for objects east or west the eyetube assumes most inconvenient directions: Like the telescope, the stand has suffered by exposure to all weathers; the motions are stif with rust; the wooden parts are split.

What I have written supplies an object-lesson— painful, but instructive, as to the inadvisability of passing any article or instrument owned by the Society from hand to hand as has been done in the case of the Sir Adam Wilson telescope. Here is an instrument with mirrors of high quality and with a full set of oculars, the whole get up neat and even handsome. It is presented to the Society, passes through the hands of those who upset the adjustments and then because they cannot see with it, condemn the telescope they have themselves deranged. The oculars and appliances vanish, no one knows how. Finally the instrument, after lying in an open shed for months is condemned as worthless at the Council table. I myself would certainly have accepted that verdict but for the fact that while Sir Adam was still with us he once asked me to his house and showed me some objects with his telescope; I therefore felt that what the instrument had done before it might be made to do again (provided it had not been ruined meanwhile). The Sir Adam Willson telescope is well worth a couple of new oculars and such other fittings as will put it into shape for use. These things given it will be a very valuable instrument in the Society's observatory.

A.F. Miller.

relating to the subject.
The report of the Council.
Meeting of June 8th was received and adopted.
The principal items were the appointment of a committee to consider the possibility of founding a journal to take the place of the present annual report, and the decision in view of Mr Mullers special report to put the Sir Adam Wilson telescope in good repair. ⊕ see end P.S.
The librarians report was received.
The Planet Mercury was reported as now visible just after sunset.
A good drawing by Mr Wetherbe of the sunspot of May 9th last was shown on the screen.
? 23rd / 1st. =
The rest of the evening was devoted to Aurora Polaris.
The subject was presented by Mr I. M. Collins. Mr J. R. Maybee and Mr A. Elvins
Mr Collins discussed ancient and modern theories the most important result as yet achieved, as pointed out by the speaker, being the production of an artificial Aurora by enveloping a bill in a net-

- work of electric wires and discharging through them a current of high potential. The light produced gave the characteristic Auroral Spectrum. Mr Mayhew described the characteristic forms of Aurora and the probable reasons for the light taking such forms.
Mr Ewing clearly demonstrated the coincidence between the curve of sunspot frequency and that of the occurrence of Aurora Borealis. The papers were illustrated by a no. of fine views of the different forms of Aurora notably three colored slides of especially characteristic displays.

J. Edw. Mayhew
Recorder

⊕ P.S. Mr R. S. Duncan was duly elected an Associate of the Society.
Mr Miller announced that he had the honor of proposing the name of M. Maurice Loewy of the Paris observatory as an Honorary Fellow.
Mr W. B. Musson seconded the nomination and much satisfaction was expressed that a gentleman of such em-

EXCEPTIONAL EARTHSHINE.

AN UNUSUAL VISIBILITY OF THE NEW MOON INVESTIGATED BY EXPERTS.

(New York 'Tribune.')

There are two sets of conditions under which it is possible to see light on the moon which comes from the earth. One of these exists at the time of a total eclipse of the moon, when the earth is directly between that body and the sun. Enough solar radiation, passing through the ring of atmosphere around the earth, is bent from its natural path to illuminate the moon faintly, even while it is in the earth's shadow. The moon will sometimes be dim and dusky during an eclipse, and sometimes it has a fairly bright copper color. The degree of illumination depends upon the clearness or cloudiness of the earth's atmosphere in the regions where the bending occurs.

The other situation is produced when the moon gets between the earth and the sun—at the time of 'new moon.' The side of the earth which is turned toward its satellite is brightly illuminated by the sun, whereas the side of the moon which is directed toward the earth receives no sunlight at all. A little light, however, is thrown back from the earth's surface to the moon. This phenomenon is reflection; the other one was refraction.

The amount of reflected light is variable, as well as that which is refracted. What is called 'earthshine' is much brighter at one time than another. Attention has recently been directed to a statement made by G. E. Lumsden, president of the local astronomical society in Toronto, on this subject. He reports that on the evening of March 22, when the moon was nearly new, the dark portion was so distinctly visible that several of the most prominent formations, seas and mountain ranges could be identified with an opera glass. The part of the earth which was turned toward the moon at that hour embraced western America, the Pacific Ocean and Eastern Asia. Mr. Lumsden has asked for information tending to show whether or not any exceptional causes were at work in this quarter of the globe to account for the unusual degree of illumination.

The matter has been investigated by the United States Weather Bureau and it now reports that of the area which was concerned in producing the earthshine about fifteen percent was land and eighty-five percent was water. Four-tenths of this land is covered with cloudiness in March, on the average, and about four-tenths with snow. Over the ocean the normal percentage of cloudiness for the same months is about six-tenths. Log books of Pacific steamships have been consulted to see if there was an unusual amount of cloud on March 22. The lower side of a cloud is likely to be dark, but the top is white when in a flood of sunshine. Hence it is assumed that the greater the cloudiness the more powerful would have been the reflection. No definite evidence of the prevalence of more than the ordinary amount on the date mentioned has been secured. But granting that there was enough to raise the proportion to seven-tenths, Professor Abbe doubts whether the difference would account for the observed effect.

He suggests another explanation, however, which clears up the mystery in a rather more satisfactory manner. The moon at perigee is only 221,000 miles from the earth, while at apogee she is 253,000 miles off. Of course, the closer she comes the more strongly she will be illuminated by earthshine. It is estimated that the brightness at the least distance would be 52 percent greater than at the greatest. This is a far greater variation than is likely to occur in the amount of terrestrial cloudiness, and the almanac shows that the moon had just passed perigee at the time when Mr. Lumsden made his observation. Still, the cause here specified should operate with equal power once a month. It would seem, therefore, that there must have been a somewhat rare combination of astronomical and meteorological influences at work to produce earthshine of exceptional intensity. The moon's position in her orbit does not completely explain the facts.

mence as Mr Lacey was likely to be enrolled among our number.

S. Edw. Mayhew
Recorder

Approved.

L. Saunders,
President

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening June 25th 1901 with the President Mr Leo E. Samsden in the chair.

Letters were read from Mr Brashear and Mr King of Ottawa describing the fine set of instruments to be supplied the Ottawa Observatory for telescopic, spectroscopic and photographic work.

The President announced that Mr Brashear would in all probability address the Society some time during the summer

M. Maurice Loewy Director of the Observatory of Paris was unanimously elected an Honorary Fellow of the Society

Messrs Pursey Wetherbe and Harvey reported on Sun spots The May sunspots had returned and a new group broke out on Sunday the 23rd inst.

Mr Samsden had observed Mercury on the 16th inst.

Mr Miller called attention to the attractions of Scorpio and Virgo which constellations were in good position for observation.

The remainder of the evening was devoted to constellation study.
Mr Witherbe's paper on the Summer Constellations was illustrated by maps of his own making, from personal observation, and in which the stars appeared in white, of proper magnitude on a dark blue ground. These maps exited much favorable comment.
Mr L. J. Howell described the circumpolar constellations and gave an interesting account of the mythology of that part of the sky.
Rev Mr Atkinson took Mr Patersons place and spoke of the great Summer Suns.
Mr Harvey devoted a short time to celebrated star clusters and warned the audience of the unreliability of many of the legends connected with the stars and the many variations of them to be found.
The President described the important stellar systems visible at this season and called attention to interesting subjects for observation. The meeting then adjourned to meet again at the call of the president.

J. Edw. Mayhew
President Recorder

Council Meeting held Friday Aug. 30th 1901. Present— Wm Summerden, Musson. Sparling. Miller, Elvins. Harvey and the recorder.

Moved W. B. Musson, seconded C. P. Sparling that Mr Wells De Surys offer to deliver a series of lectures on elementary astronomy provided an audience of at least 50 persons could be guaranteed at each lecture be accepted. Carried

Moved C. P. Sparling seconded Mr Miller that the Library of the Institute be arranged for as a lecture room for the above purpose. Carried

The Pres. presented a draft of the programme for the remainder of the year which was adopted and will be printed.

Some accounts were passed and books authorized to be obtained.

Mr Millers suggestion that all books taken from the library be entered in a special book instead of on slips was unanimously approved and will be adopted.

J. Edw. Maybee
Recorder.

adopted Sept 3rd '01

SUPPLEMENTAL COURSE OF LECTURES.

THE SOCIETY has much pleasure in announcing that during the Autumn and Winter, MR. A. T. DE LURY, B.A., Lecturerer in Mathematics in the University of Toronto, will deliver, under its auspices, a Course of Lectures on "ELEMENTARY ASTRONOMY," especially intended for the information and encouragement of persons who take some, interest in astronomical knowledge and observational work, but who have not, as yet, become more than general readers or students. In tendering these lectures, MR. DE LURY has requested that they be open to the public, and with a view to giving effect to his wishes, the Society is making the necessary arrangements. Due notice will be given as to the place where, and the dates upon which the lectures will be delivered, and also of the subjects selected by the lecturer.

The Society will be glad to receive the name and address of any one desiring to attend the course of lectures which will be illustrated by lantern slides.

The Toronto Astronomical Society, 1901

September-December Session,

PAPERS, ETC.

List of Officers.

Honorary President...The Hon. Richard Harcourt, M.A., K.C., Minister of Education.
President.....Mr. G. E. Lumsden, F.R.A.S. 57 Elm Avenue, Rosedale.
1st Vice-President....Mr. R. F. Stupart, F.R.S.C., Director of the Toronto Observatory.
2nd Vice-President....Mr. C. A. Chant, M.A. (Tor.), Ph.D. (Har.), Lecturer in Physics, Toronto University.
Treasurer.....Mr. Chas. P. Sparling, 30 Adelaide Street East, Toronto.
Secretary ... .Mr. W. Balfour Musson, 37 Yonge Street, Toronto.
Recorder.....Mr. J. Edward Maybee, M.E., 103 Bay Street, Toronto.
Librarian ..... Mr. Z. M. Collins, The Canadian Institute.
Curator.....Mr. D. J. Howell, The Canadian Institute.

The active membership of the Society consists of Fellows and Associates. Associate Membership is open to everyone interested in Astronomy and Astronomical Physics.

FEE—Fellows and Associates residing in Toronto, $2.00; other Fellows and Associates and Ladies, $1.00.

Meetings are held in the Society's rooms in the Canadian Institute, Richmond Street East, Toronto.

PAPERS, ETC.

1901

Sept. 3rd—General Meeting.

Sept. 17th—"The Pleiades in the Classics and Mythology." Mr. J. Cleland Hamilton, MA., LL.B.

Oct. 1st—"Deformed Lunar Craters." (lantern illustrations). Mr. A. Elvins, J. J. Wadsworth, M.A., M.B., and the President.

Oct. 15th—"Stellar Evolution as indicated by Spectrum Analysis." (lantern illustrations). Mr. W. Balfour Musson.

Oct. 29th—"A General View of Ether Waves." (lantern illustrations). Mr. C. A. Chant, M.A., (Tor.), Ph.D. (Har.).

Nov. 12th—"Dalton, the Father of English Physics." P. H. Bryce, M.A., M.D.

"Horrocks, the Father of English Astronomy." A. D. Watson, M.D.

Dec. 6th—Meeting of the Council to take into consideration the general state and welfare of the Society and to nominate candidates for office during 1902.

Dec. 10th—"Electrical Disturbances during Auroral Displays." Mr. R. F. Stupart, F.R.S.C., Director of the Magnetic Observatory, Toronto.

Further Nominations by Members of Candidates for office.

Dec. 23rd—Annual General Meeting, Election of Officers and transaction of other business.

"Hints for Amateur Observers." Mr. A. F. Miller, Mr. J. Weatherbe, Mr. A. Elvins, and the President.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening Sept 3rd 1901 with the President Mr Geo. E. Saunsden in the chair

A letter was read from M. Camille Flammarion accepting nomination as an Hon. Fellow of the Society and also from M. Maurice Loewy acknowledging the honor of election as Hon. Fellow.

A letter was also read from Mr C. A. Chant, who has recently obtained his degree of Ph. D. at Harvard, promising to give the Society a paper on Ether waves at some future date.

The annexed report of Council was received and adopted

On the motion of Messrs Saunsden and Harvey, M. Camille Flammarion was unanimously elected an Honorary Fellow of the Toronto Astronomical Society

The following nominations for the honor of Fellowship in the Society were then read

Mr Geo. E. Saunsden F.R.A.S. by Mr Miller & Elvins
" Arthur Harvey F.R.S.C Elvins J. K. Collins
R. F. Stupart F.R.S.C Harvey. Miller
C. A. Chant M.A., Ph.D " "
A. T. De Lury B.A. Saunsden "

A. D. Watson M.D. Lumsden, Miller
J. J. Wadsworth M.D. " "
A. F. Miller Elvins, Lumsden
D. J. Howell Lumsden, Elvins
J. K. Collins Elvins Lumsden
Thomas Lindsay " "
J. Edward Maybee Lumsden, Elvins.
Rev. Robert Atkinson " Miller

Mr Elvins then presented to the society the minutes of an Astronomical Society founded in 1868 in Toronto and containing observations of the solar eclipse of 1869.

Mr J. S. Ridout reported that Capella a spectroscopic double had been divided by the great Greenwich telescope. Its period is only which Mr Musson noted as being very short for a solar star.

Mr J. C. Hamilton sent a report of a Meteor observed by Dr Abrahams on July 9th last. It moved across the sky from S. W. to N. E with a noise like escaping steam. The head finally split up into three parts one continuing on in the original direction. A broad trail was left behind which persisted for about 20 mins. This meteor was also observed by Mr Wetherbe

On motion of the President, seconded by Mr A. F. Miller, Professor J. A. Brashear Roc. etc. of Allegheny. Pa. was elected an Honorary Fellow.

by Mr A. T. Stuart
by Rev. R. Atkinson who noted the brilliant illumination of the landscape by ~~the~~ light ~~of the~~ and by Mr A. J. Howell who commented on the wavy appearance taken on by the trail of light, which as remarked by Mr Harvey was probably due to some motion in the upper regions of the atmosphere.
Miss Lint reported a red meteor on the 13th of August.
Mr Elvins saw several August meteors. some of them Perseids.
Mr Lewar noted that 1/3 part of the great meteors trail was a greenish-blue between the light of barium and zinc and the remaining 2/3 greyish white like the vapors left by these metals when burnt. ⊕
Mr Miller reported that Jupiter and Saturn had been splendidly ~~fab~~ placed for observation this summer Jupiters belts had evidently been undergoing changes as the southern central dark belt was now darker than the northern and other parts had also altered.
Saturn is now, as regards its rings, in much the same position as in 1856.
Mr Miller reported his personal

⊕ Mr Wetherbe reported a second meteor at about the altitude of Jupiter leaving a trail about 15° long.

observation of the motion of a double star.
The star Pi Aquilae in the years 1888 to '84 could readily be divided. From the years 1890 to '95 the star remained single even under the highest powers. Now with a power of 120 the stellar point is seen elongated and with a power of 200 the star shines out double as when first observed Nova Persei is again visible as a small telescopic star evidently at stellar distance It is a gas star showing a spectrum of two bright lines the Beta Hydrogen line and one of the nebular lines Mr Olmsson stated that Nova Persei had had a great effect on the theories of new stars. In at least 4 new stars it was evident that the shifting of the dark lines of the spectrum in one direction and the bright lines in the other could not possibly be due to motion in the line of sight as was once thought to be the case. Mr Harvey stated he had been working on the theory that the shifting of the lines was due to pressure in the atmosphere of the body emitting the light and

thought that a revision of spectroscopic theories would now be necessary.
A motion that steps be taken, in view of the approaching visit of the Duke of York, to have the term "Royal" added to the title of the society was on a small vote referred to the council.
No paper had been set down for the evening which was devoted particularly to reports of observations.

Approved.
G. E. Lumsden,
President.

J. Edw. Maybee
Recorder

P. S. Mr Georges Sogler Captain of French Artillery on his way home from China was presented to the meeting by Mr Arthur Harvey M. Sogler is a member of the French Society of Exploration and undertook to convey the fact of his election as Hon. Fellow to M. ~~Catt~~ Camille Flammarion whom he characterized as no less modest than distinguished.
Before adjournment [J.E.M.]
the regrets of the society were expressed at the death of Mrs A. S. Savigny, one of the first lady member of the Society.

President

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening Sept 17th '01 with Mr R. F. Stupart Vice-President in the chair.
Mr Munson reported having received a letter from the British Association asking for the appointment of a delegate from the society for the meeting of the Association recently held in Glasgow.
In view of the lack of time Mr Napier Denison had been appointed without having obtained his consent ~~acted~~ by the Pres & Cor. Secretary to act for the society.
The society on motion endorsed this action.
The serious and probably fatal illness of Mr Thomas Lindsay was brought to the notice of the society and regret was expressed that it did not appear feasible to have him at once elected to the Fellowship in the society to which he was recently nominated.
Mr Pursey reported "no spots on the sun". Mr Harvey had seen slight traces of faculae Rev. Robt Atkinson exhibited a good photograph of a tidal bore on the Petticodiac River. Mr Stupart reported an Aurora visible between

Port Arthur and Winnipeg on Tuesday evening 10th inst.
Mr Howell called attention to Minima of Algol on Sept. 18th at 19-4 P.M. & Oct 3rd 3-4.
Mr Wetherbe reported that Encke's comet had been seen by a correspondent of his in New York on Sept 12th.
Mr Miller reported the color of Nova Persei as being whitish with a pinkish tinge.
There appear to be at least three bright lines in the spectrum and possibly others.
Formerly the Beta Hydrogen line was brightest now one of the nebular lines is brighter than the others.
There is also a faint continuous spectrum and the general appearance closely resembles the spectrum of a planetary nebula.
Absorption lines are still seen or at least dark spaces.
Mr J. A. Paterson read a note referring to the 12 known motions of the earth.
According to the constitution the names of members nominated for Fellowships came up to be voted upon before for reference to the council.
On motion the matter was

left over till the next meeting.
Rev. R. Atkinson asked that
his name be withdrawn from
the list.
Owing to a special engagement
of Mr Stuparts, Mr Arthur
Harvey took the chair during
the paper of the evening.
The subject of this was
"The Pleiades in the Classics and
Mythology" read by Mr
J. C. Hamilton M.D. L.L.B.
The paper contained a large
amount of interesting material
and evinced much painstaking
effort on Mr Hamiltons part.
Mr Patterson spoke briefly
in comment after which
the meeting adjourned.

Approved,
G. Stewardson,
President

J. Edw. Maybee
Recorder

STORY OF THE PLEIADES.

Interesting Address by J. C. Hamilton on a Notable Constellation.

A largely attended meeting of the Astronomical Society was held in the Canadian Institute last night at which a paper was read by Mr. J. C. Hamilton, M.A., LL.B., on "The Pleiades in the Classics and Mythology." This constellation is one of the most celebrated of all the celestial hosts and from the earliest days has been looked upon with particular affection by widely-separated races of men. This twinkling little cluster is now easily seen any evening after 9 o'clock down near the eastern horizon, and two hours later the "Golden horns of Taurus" will swing into view with the fiery star Aldebaran blazing in the eye of the bull.

Mr. Hamilton's paper displayed much careful reading and dealt with the references to the Pleiades in Job and Amos, Homer, Hesiod, Virgil, Ovid, Horace and other poets. The legends of the various nations in regard to the Pleiades were fully discussed, and their mythical connection with the festivals of the dead, the Noachian deluge and the worship of Isis and Mithra. It was also pointed out that as late as the year 1673 in north Britain relics of an ancient star worship remained. In August at the time of the sunrise culmination of the constellation of Taurus, the Bull (containing the Pleiades), a bull was sacrificed to secure the recovery of a sick person. The paper proved exceedingly interesting and was listened to with marked attention.

21st Sept 01

LY STAR, SATURDAY, SE

THE PLEIADES.

(Inspired by Mr. J. C. Hamilton's paper before the Torono Astronomical Society.)

WHEN the evenings grow shorter and night early enfolds the sky in its diamond sprinkled robe, the watchful star-gazer turns his eyes from the giant Arcturus sinking in the west, and eagerly waits for the rising of a shy twinkling cluster just coming into view over the eastern tree-tops.

Through the past centuries millions have watched and waited for the return of this little group, have seen it pass across the sky, and finally disappear in the flaming chariot of the sun. What stars are these so eagerly expected, so celebrated in poetry, so inwoven in mythology, so universally known in the folk-lore of the world? They are the Pleiades, the seven sisters, "glittering like a swarm of fireflies tangled in a silver braid," just behind the "golden horns of Taurus," as he faces the oncoming of the giant Orion.

In Greek mythology the Pleiades were the seven daughters of Atlas and Pleione, who, with their parents, were after death placed in the heavens, there to shine forever. One daughter unhappily married a mortal, and shines with luster sadly dimmed among her divinely-mated sisters.

By the unaided eyes six stars only can ordinarily be seen, though sharp eyes will often distinguisn the degraded seventh and sometimes one or two more of still lesser lustre. A group of dancers many ancient legends made them, and Elihu Vedder, the American illustrator of "Omar Khayam," has beautifully depicted the group of joyous, stately sisters, twining an endless band of drapery, typical doubtless of the mystery of existence:

"Into this universe, and why not knowing,
Nor whence like water, willy-nilly, flowing."

And strangely prophetic, too, of the recent discoveries of the nebular entanglements of this constellation.

The modern photographic plate possesses an enchanter's vision, and sees things the human eye can never witness

To its Lyncean eye the great suns of which the constellation is composed are bound together in withes of flame, great wisps of misty world-stuff, a far-reaching nebula, from whose womb has been born these twinkling children of fire. To the camera the seven daughters of Atlas are multiplied into a host of over 23,000 shining stars, and no doubt in years to come the great astronomers of those days will, by comparing our records with their own, be able to point to many more, and say these are newborn sons of heaven. Many, many years before modern astronomy was born an unknown writer poetically and probably unconsciously spoke modern truth of the Pleiades. "Canst thou bind the cluster of the Pleiades, or loose the bands of Orion?" says Job to his friends, and, strange to say, we now know that the great constellation of Orion, like the Pleiades, is bound in the chains of a far-reaching nebula of which the great nebula in the sword is but a brighter condensation.

To us the Pleiades look small and faint. But what can one expect? Light travels at the rate of 186,000 miles per second, and yet it must wing its way through the mysteries of space for some 250 years ere it reaches our eyes from these inhabitants of immensity. Small indeed they look, but we are told that Alcyone is at least a thousand times more brilliant than our own lord of light. When we think of all this we can but say with the author of Job: "Is not God in the height of heaven, and behold the height of the stars how high they are."

The phrase "the brotherhood of man" is one which falls glibly from many in these days, and yet it is doubtful if we always realize its fundamental truth. Let us study the folk-lore of the nations of the earth, and it is absolutely startling to observe how often the same phenomenon gives rise to similar myths in widely separated races.

The Greeks formed their poetic conception of the degradation of one of the seven sisters by her voluntary association with an inhabitant of this dull planet, but people as remotely situated as the Chinese and the Cherokee Indians have also their stories to tell of the seventh star's fading glory due to terrestrial contact. So it seems as if all nations have recognized the imperfection of earthly things and the actuality of a more glorious existence in the pure regions of the celestial sphere.

One myth connected with the group deserves special mention, the story of Alcyone.

We talk often of Halcyon days, when all is golden peace and calm happiness. The story goes that during the time of the winter solstice, when the Halcyon, or kingfisher, is brooding on her nest, the sea is calm and navigation in the Mediterranean free from danger. The Halcyon is the Pleiad Alcyone, whose husband Ceyx was drowned at sea. She seeks his body along the shore, and her yearning spirit flies to meet him on the wings of love. Responsive to her love Ceyx is snatched from the waves, and two happy birds fly away together over the rolling sea. The Halcyon days are our legacy of her love. Lampman has laid his tribute at the feet of Alcyone, and with a stanza of his poetry we will leave this favorite cluster of all nations:

"In the silent depth of space,
Immeasurably old, immeasurably far,
Glittering with a silver flame
Through eternity,
Rolls a great and burning star,
With a noble name,
Alcyone."

—Stella.

Naturally the Pleiad but a daughter of Aeolus

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening Oct 1st with the President Mr Geo. E. Saunders in the chair.

On motion the nominations for fellowships were left over for future consideration.

A letter was received from Dr Brashear acknowledging his election as Hon. Fellow and forwarding a monograph on The Carnegie Technical school.

Mr W. C. Stinson of Barrie wrote asking information as to ways and means of forming an astronomical society. Mr Stinson was authorized to give the necessary information.

Mrs Lindsay wrote acknowledging the kindness of the society shown in connection with the death of her late husband Mr Thomas Lindsay. Mr Paterson moved a resolution of regret at the death of Mr Lindsay and sympathy with the family. The motion seconded by ~~Mr Miller~~ Geo. R. Atkinson and spoken to by Mr Miller. A copy of the motion was forwarded to Mrs Lindsay and another is attached to these minutes.

Mr Stinson read a short biographical sketch of Mr Lindsay written

for the daily press.
M. Cam. Flammarion wrote offering to fill up any gaps in the societies bulletins of the Paris Observatory.
Mr Brashear reported the poor results he had obtained with a Russian 5" glass he had intended to use with the society for this falls outdoor work

Predictions of Phenomena
Minima of Algol Oct 28th 10 P.M. and Oct 31st at 7 P.M.
Mercury visible as an evening star from the 11th to 18th inst.
Venus is near Uranus on the 24th inst.
On the 15th only one of Jupiters moons will be visible
On the 8th or 9th Ceres will be between τ & δ Ceti
Mr Miller reminded those looking for Nova Persei that the stars 30. 32. & Kappa are its nearest companions. On Sept 16th a faint Auroral glow was visible
It was announced that Sir Robert Ball would be on this continent shortly and an attempt will be made to have him visit Toronto.
Mr A. Elvins then read an illustrated paper on Deformed lunar craters showing clearly the evidences of water action in breaking or washing down

the walls of craters bordering on some of the Maria.
Mr Elkins also expounded his theory of the effect of tidal action in depriving the moon of air and water.
Mr Saunders read a short paper by Mr Wadsworth dealing with some forms of crater deformity. An outdoor meeting was announced for the evening of the 21st inst in the Rosedale school grounds.

Approved,
G. E. Saunders, J. Elkins Mayhew
President. Recorder.

THOS. LINDSAY, THE ASTRONOMER.

Career of Late Well-known Scientist—Virginius Episode.

In the death of the late Thos. Lindsay, the Toronto Astronomical Society has suffered the loss of a valued member and a faithful friend. Mr. Lindsay was born in Edinburgh in 1834, coming to Canada, with his parents, when quite young. His early education was received at the George Street Public School, where he pursued his studies with such success as to win a scholarship, entitling him to entrance at the old Grammar School (now known as Jarvis Street Collegiate). He entered this institution in 1866, and left behind him the record of "a good fellow, an able student, and a hard worker," his name appearing repeatedly in the honor and prize lists, in Greek, Latin, French, mathematics, history and antiquities. After leaving school, Mr. Lindsay spent several years at sea, and had a somewhat eventful career, being one of the survivors of the ill-fated "Virginius," which was taken by the Spaniards during the Cuban revolutionary war of 1868-78. It was during this period of his life that he first became interested in nautical and mathematical astronomy.

Mr. Lindsay became a member of the Astronomical and Physical Society of Toronto in 1890, the year of its incorporation, was elected Assistant Secretary and Editor in 1894, and Recording Secretary and Editor in 1897, which office he held for the succeeding four years. During this period the editing of the society's transactions and annual report devolved almost entirely upon him, and the volumes issued in that time are evidence of his labors.

In addition to his official duties, Mr. Lindsay took an active interest in all matters affecting the welfare of the society, and contributed many papers to its transactions, his series of articles on "The History of the Nautical Almanac" being among the most interesting and valuable contained in that publication. It was his intention to have collected and published these articles, when completed, in book form, and it is much to be regretted that his unexpected death will leave this work unfinished.

It was not only of Urania, however, that Mr. Lindsay was a devoted disciple; all the problems of modern life, whether scientific, economic or philosophical, held for him a keen interest, and claimed a share of his attention, and in addition to his astronomical papers he from time to time contributed articles of general interest to periodical literature, The Canadian Magazine, The Canada Educational Monthly and The Methodist Magazine, being among the journals accepting articles from his pen. Ever ready to extend the hand of welcome and encouragement, there are few members who came into the society during Mr. Lindsay's term of office who have not cause to remember his genial good nature, and his kindly efforts to make plain the path before them. The Toronto Astronomical Society has grown beyond the anticipations of its founders, and will, it is hoped, continue to widen its sphere of usefulness, but whatever may be its influence in the future, when the society's history comes to be written and those recalled who labored earnestly and faithfully for its welfare in the days of its youth, the name of Thos. Lindsay will not be forgotten.

Moved by Mr. John A. Paterson,

Seconded by Rev. R. Atkinson.

That as a Society we place on record our earnest appreciation of the work which our departed friend, Thomas Lindsay, was enabled to do while endowed with the activities of life. To him came the voice, we have not yet heard, that called him to another sphere of work, and he saw the hand that we have not yet seen. that beckoned him away from the dull drudgery of this life to the joys of a better and more fully rounded one. In the passing of our former Secretary there passed an earnest student, who sought to open the treasuries of science with that key of knowledge which was given him, a hard and earnest worker, thoroughly devoted to our interests, a faithful friend and honest, conscientious man. And what more can be said? We mourn his loss to ourselves and still more to his family, for he was a good husband and a kind father. May the God of peace and consolation minister to his widow and children in their desolation, and may Heaven cast over them the beautiful radiance of that Providence that provides for all who wait.

Toronto, Oct. 2nd, 1901.

Regular meeting of the Toronto Astronomical Society held Tuesday evening Oct 15th in the Canadian Institute with the President Mr Leo. E. Denison in the chair.

Miss Jean Gilchrist was duly elected a member of the society and the Rev. R. A. Abraham was nominated by Messrs Paterson and Allison.

Among the new books received the Librarian reported a copy of R. S. Haliburtons essays vol. 2 obtained from Mr Haliburtons nephew through the kind offices of Mr J. C. Hamilton and a copy of "Christian men of Science" presented by the Rev R. Atkinson

Minima of Algol were predicted on the 17th inst. at 11.54 P.M. and on the 20th at 8.28

Mr Wetherbe reported having held a popular open air meeting at Athens Ont.

Mr Miller reported that by special arrangements he had been able to see the blue hydrogen line in Nova Persei. The star remains of about the 4th mag. Mira Ceti is fading and is about the 8th mag.

Information was obtained from Mr Stupart that the Can. Inst. is trying to arrange for the Dir Probe & Ball to visit Toronto

and might look for the co-operation of the society.
It was announced that open air meetings would be held at Huron St school grounds on the evenings of Thursday and Friday, 17th & 18th inst, and at Rosedale school grounds Sat & Monday the 19th & 21st inst.
Mr Munson was then called upon to read his paper on "Stellar Evolution as indicated by spectrum analysis" This was an able and exhaustive effort to give a resumé of the progress made in inducing the light of the stars to tell us the story of their chemical composition and their life history.
While we do not as yet know enough to say that such-and-such a star is in its old age and that some other star is certainly young and in the process of time will become just such a star as the former and give the same spectrum yet it seems certain that stars are born, rise to maturity and slowly sink into old age.
The depths of space afford such boundless opportunities for variety that no astro-physicist dare say that he is certain all the stars

are alike in composition.
What we do know is that the light of the stars when analyzed shows that they belong to at least 5 distinct groups and while these differences may be due to differences of composition other evidence corroborates us in the belief that evolution is the key to the mystery:
The paper was splendidly illustrated by Mr Howell and the arrangement of signalling apparatus between the readers desk and the lantern deserves special commendation

J. Edw. Maybee
Recorder

Approved,
E. Frossard,
President.

Meeting of the Council held in the library Friday aft. Oct 25th 1901

The President reported that arrangements had been made for the use of the Physical Room at Toronto University College for the course of Lectures to be given by Prof. Le Sueur under the auspices of the society.

Accounts were passed for a stand for the new 4" telescope and for the Garratt W. Smith telescope.

Mr Howell was authorized to install an electric reading lamp for the use of those reading papers before the society and for an electric buzzer as a signal from the reading desk to the lanterin.

Light-boxes were also ordered for the slides belonging to the society

J. Edw. Maybee
Recorder

Oct 29th

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday eve. Nov 12th with the President Mr Geo. E. Lumsden in the chair. The report of the Council meeting of Oct 25th was received and adopted.
Mr Andrew Elvins finding it impossible to continue his active outdoor work with the telescope wrote the Society asking it to accept the 3" refractor for the use of those members of the society unprovided with instruments. The gift was accepted and Messrs Miller and Pursey appointed a committee to draft a resolution of thanks to Mr Elvins.

This letter now filed under Elvins.

Dr Abraham was duly elected a member of the society and Mr Arthur M. Oldham of 15-9 Bloor St E was nominated by Messrs Lumsden and Atkinson
Under the head of predictions it was reported that Jupiter and Venus would be in conjunction on Nov 18th. Saturn & Venus on the 19th and Sat & Jupiter on the 28th when they would be within 28' of one another.
Mercury is a morning star on the 21st.

Minima of Algol occur at 9 P.M
on the 20th and 6 P.M. on the 23rd.
Mr Pursey reported 3 faint spots
on the sun Nov 12th and
Mr Wetherbe reported that
one of these was really double.
Venus is now about one
half illuminated.
Mr Munson drew attention
to the fact that the average
density of Algol variables
P.S ⊕ is about 1/6 that of water.
Mr C. A. Chant M.A., Ph. D.
was then called upon to
address the society on the
subject of ether waves.
Dr Chant gave a very in-
teresting and complete resumé
of present position of scientific
knowledge in regard to ether
waves and of the attempts
made to bridge the gap in
& between the comparatively
short heat waves and the
longer electro-magnetic waves.
The gap still left is comparatively
small and as the substantial
identity of the shorter waves
with the long is easily proved
the gap may practically be
ignored. We have now
practically a continuous series
of wave commencing with the
~~invisible~~ extremely short in-
visible vibrations which make
themselves felt in the sensitive

plate when the spectrum of sunshine is photographed, shading down through the colors of the visible spectrum from violet to red, then running through the longer heat waves and into the still longer electro-magnetic waves.

Approved.
G. E. Lumsden, Jr.
President

J. Edw. Maybee
Recorder

NEW ASPECTS OF ETHER WAVES.

Prof. C. A. Chant Lectures on Some Results of Modern Science.

At the regular meeting of the Toronto Astronomical Society, held in the Canadian Institute on Tuesday evening, Prof. C. A. Chant, Ph.D., addressed the society on the subject of "Some New Aspects of Ether Waves." Scientists, finding it impossible to believe that light, heat and electricity can be conveyed through nothing, have imagined that space is filled with a substance known as ether. This ether must possess great elasticity to account for the rapidity of the vibrations transmitted by it, and yet be of very small density or the motions of the heavenly bodies would soon be brought to an end.

Dr. Chant explained clearly the unity of the waves transmitted through the ether, commencing with the extremely short invisible vibrations which make themselves felt on the sensitive plate when the spectrum of sunshine is photographed, shading down through the colors of the visible spectrum from violet to red, then running through the longer heat waves and into the still longer electro-magnetic waves.

This long bridge is practically without a gap, and it must certainly be considered one of the most beautiful and ingenious results of modern science to demonstrate the relationship of these radiations, which disclose themselves to us as chemical rays, light rays, heat rays, and last and by no means least, as electro-magnetic rays, which are now proving so serviceable in wireless telegraphy.

At the next meeting of the society, Tuesday evening, November 12, Dr. P. H. Bryce will read a paper on "Dalton, the Father of English Physics," and Dr. Watson one on "Horrocks, the Father of English Astronomy."

The New Observatory.

Tenders are being asked for the new astronomical observatory, which is to be located near the southwest gate of the Experimental Farm. The building will be of Nepean sandstone, with facings of Credit Valley stone of a darker hue. It will in general contour resemble the arc of a circle. It is to be two stories high, with a basement. At the back and in the middle of the building the revolving dome for the big telescope is to be located. The telescope will stand on a concrete foundation 50 feet high. The building is to be about 120 feet by 60 feet. In the basement there will be clock record and pendulum chronometer rooms. There will also be a room for standards and testing, and workshops and heating appliances. On the ground floor there will be astronomers', directors' and computers' rooms, and a room in which time records will be taken. On the next floor there will be a photographic department, and also a large lecture room. Underneath the dome there is a central hall on the ground floor, and on the next floor a museum.

⊕ P.S. Mr Munson also noted that the irregularities prophesied by Prof. Chandler in the Algol period were already showing themselves and that the theory that Algol and its dark companion were circling round a third body was probably correct. It is noted that Flammarions photos of Nova Persei show a bright nucleus surrounded by a fainter haze.

Meeting of Council held
Friday Nov 8th 1901.
The proposed visit of Sir
Robert Ball was the first busi-
ness up for discussion.
In view of the fact that Sir
Robert could not come at any
other time than Christmas
week Mr Houston of Massey
hall and Mr Howell both
declined to take the risk of
financing and managing
the affair.
It was open to the society to
undertake the matter itself
but in view of the proposed
date of the visit, it was
moved seconded and carried
that the society make no
move in the matter.
The following expenditures
were authorized.

Sale of Bookcase.
+ This was
made by the
old bookcase
& the Technic
and Sch. of W.
Kansas

+New book case $5.
Crossley Gledhill and Wilson on
Double Stars $2.50
Eight volumes Astronomical
Register $6.00
Clerk-Maxwell on Saturns rings
.45
Proctors half-hours with
the stars .75
About the weather, Earth & Sky
and stories of Great
Astronomers 3 vols $1.65
The librarian was also author-
ized to buy and fill a gap

Note -

A body that presents in turn all parts of its equatoral surface to every point of view outside of its equatoral circumference, can truly be said to rotate. In the process of one body swinging round another, it may turn all parts of its equatoral surface to every point of view outside of its orbit. This latter is what the moon does, thus it may correctly be said to turn once around in the process of each orbital revolution having the Earth for the center.

The Moon cannot therefore truly be said to have a rotary motion. and if let free from the influence of the Earth ~~would~~ would go off in space like an arrow.

J H Weatherbee

1901

Nov 12 - 1901

Last Sunday Evening coming
from Church, about 9 p.m. my
wife and son who on the Sherbourne
street bridge saw a beautiful
green meteor - It fell with
a slant to the North apparently
not far from Rosedale -
They could not say from
what direction it came

J. B. Hamilton

in the vols. 57 - the Astronomical Register between 18 and

J. Edw. Maybee
Recorder

A WALLED CITY IN THE CLOUDS.

A Remarkable Phenomenon Seen From Lake Rosseau.

LOOKED LIKE PAN-AMERICAN

Astronomical Observations Taken During a Residence in the Lake District of Canada.

Under heading "Notes from Lake Rosseau," the following interesting astronomical and physical observations, by Mr. J. Cleland Hamilton, appear in the current number of the Anglo-American magazine:

Two vivid meteors passed over Toronto on the evening of the ninth of July. The second of these I saw in Rosedale about 10.15 p.m., when it glided like a rocket, not far from the horizon, over the trees in a northerly direction, leaving a fiery trail behind. These were assumed to be the forerunners of the expected annual Perseid showers, as to which articles have appeared in the published proceedings of the Toronto Astronomical Society.

I spent from the third to the sixteenth of August on Bohemia Island in Lake Rosseau, which is 497 feet higher than Lake Ontario and 744 feet above the sea. The sky was clear at night for most of the time. Venus was a beautiful object for an hour after sunset. Jupiter, with father Saturn at his right was double the size as viewed in Toronto. The same may be said as to the fixed stars. The Great Bear, Cassiopeia, and other constellations were well defined on the deep blue sky. Arcturus and Capella were very brilliant; the Milky Way, a diamond-studded path, observed with admiration by former inhabitants of this romantic region, as well as by those of our day coming from smoke-obscured cities. Here many an old Nokomis pointed little red folk to the fateful path:

Shewed the broad white road in heaven,
Pathway of the ghosts, the shadows,
Running straight across the heavens,
Crowded with the ghosts, the shadows.

We were not so fortunate this season as to see the Aurora Borealis, though I have formerly witnessed its weird dancing and heard the whizzing noise its electric motion makes over these lakes in August, but more clearly after the frost sets in. The Algonquin's conception as to the Aurora was similar to that of the Milky Way as above depicted by Longfellow. They called it chibayag nimi dewag, meaning "the dead are dancing."

Chippewas from Rama daily pass in canoes before us, patiently trolling for lake trout with long weighted lines.

Perseid and other shooting stars were seen during each of these clear nights between eight and twelve o'clock, and so frequent as to be the subject of general remark. Some of them appeared to dart from Perseus, but they sprang from all parts of the sky. Persons from whom enquiry was made counted from four to six in an evening—one who had been out until midnight in an open boat alleged that he observed twenty during his trip. A lady who has since come down from the lake informs me that she saw five fine meteors on the night of the twentieth. These objects, commonly called shooting stars, were lately observed elsewhere in Canada, and it may be found that their occurrence was general from nearly the beginning until the 21st of August, when the moon entered on her first quarter, and most pronounced in the high regions. A traveler from Lake Megantic, Quebec, a place between hills 3,000 feet above the sea, informs me that during the two middle weeks of August meteors were there frequent: that on the night of the sixteenth, and early hours of the next day, the "sky was full of them," and that the general direction of the shower was north-west. Mr. E. B. Lefroy, of Toronto, states that he was touring in Lake Tamagaming between the fifteenth and the twentieth of August—the weather was fine and many meteors were seen each night, but no count of them was taken. This lake is drained by the Sturgeon River into Lake Nipissing.

On the evening of the thirteenth a wonderful phenomenon was presented, which was witnessed from the upper end of the lake as well as from Bohemia Island. A party of Toronto ladies agree that they also saw from their skiff near Maplehurst what we will attempt to describe. The sunset in the west was rich in varied tints, but not unusual in this high and pure atmosphere. Across the lake from Wrenshell's Point is a broad bay with the verdant Euchre, or Blueberry, Islet at the south end, and having as its easterly boundary a broken shore of seamed granite studded with moss, trailingvines, and wintergreen. Above is an opening giving a glimpse of a clover meadow, then a burnt clearing; dark pines and white birch, among great boulders and Laurentian walls, home in their season of the partridge and red deer, occupy a few rods. Next Lismore is passed, a pretty cottage in a wooded nook. Then comes Monyca Island at the entrance to Skeleton Bay, in which is the modest hunting-lodge of Lord Aylmer. Below is the black water mirroring in its placid depths an ever-moving panorama, the rocks, the trees and vines, the clouds, the changeful moon, the kindly planets, and the distant stars.

This was the background of the picture, over which banks of almost stationary clouds facing the glowing west took on the semblance of an Eastern walled city. At the south-west end of the structure was a great round tower, while bastions, steeples, cupolas, and minarets rose nearby. High walls entirely surrounded a large space, glowing with a varied sheen of grey and opal, studded with gold, ruby, and sapphire, while we gazed with admiration to see the inhabitants and their works. At the north and east of the fairy picture were other towers and battlements, some little higher than the walls, others soaring above them. Each part of the cloudy wonder remained long enough to allow the observer to judge of its proportions and enjoy the harmony and beauty of the scene.

Thus a quarter of an hour passed, when Boreas, with grim giant's head, his body swathed in a dark flowing cloud, came down from his caverns in the chill North-west, over Ross-Moyne, Judd-Haven, and the Muskoka Royal. It was a masterful sphinx-like figure, relentless and insensible to the charms of beauty, on which the sun's red rays fell.

"What seem'd his head
The likeness of a kingly crown had on."

Then did our eager eyes feast on the scene and impress on memory its features and moving tints, more fair than brush or pen has ever depicted. We felt that the resistless power, approaching in silent majesty, was akin to the lightning and the thunder, yet we prayed for a little respite. Even for one short hour, spare our City Beautiful! This you may surely do unless like Sampson you are blind and on destruction bent!

Onward with Titanic force as of a mighty wave or avalanche, calmly advancing, he overturns our glowing palaces. The towers and shining walls are rudely shaken, razed, and driven into rosy rolling masses with as little ceremony as a child's house of cards, and go tumbling over the lake and the pine-trees.

Did they go to make a gorgeous pathway for Maia, Alcyone, and their royal Pleiad Sisters, now moving up to the eastern horizon, and in a few hours to look down on us after their summer wanderings under the earth?

Some of the fortunate observers suggested that a mirage had, by its magic mirror, brought before us an ancient Eastern city. A smiling fair one said, "Do we look on the Pan-Celestial, or is this our castle in Spain?" Others are content to believe that Nature, all bountiful and beautiful, had ended her day's work with a panoramic display from her store of wonders.

Since writing the above in August the writer found in the beautiful "Esplanade" of the Pan-American Exhibition what might have passed as the original of the city in the clouds. The director of the electric lighting there, however, informed him that the light was not turned on until 8 p.m. of the 13th of August, and as the sun set over Lake Rosseau half an hour before that, the idea that we had witnessed a mirage reflected from Buffalo was abandoned.

It is stated that in Alaska, the reflection on the sky of a city, supposed by some to be Bristol, is not uncommon. In Sir Norman Lockyer's work, "The Meteoritic Hypothesis," it is shown from observations that of all the meteors that yearly fall to the earth as our planet passes through their elliptic courses, 38 per cent. are seen in August, and rather more than 11 per cent. in November.

The mean duration of the flight is 45 seconds. "Not less than 20 millions of luminous meteors fall upon our planet daily, each of which in a dark clear night would present the phenomenon of a shooting star." Many more are invisible. Those falling from July 11th to August 22nd are called Perseids, as they seem to move from a part of the sky under the constellation Perseus. The Leonids should appear in the second week of November, and in the last ten days of that month the Andromedas, similarly named. More are seen after than before midnight. These hints may be of practical interest to observers. Toronto was unfortunately clouded this month. It may be also that our part of the earth's surface did not come in contact with this month's meteors as they crossed their courses. But fiery celestial displays are reported as having been observed lately in California and Arizona.

Most of the meteors that come within the attraction of the earth are small, break up, and fall in sand, but now and then a stone of good size is found such as that in Victoria College, brought from a Western prairie, where it was regarded with veneration by the Indians.

Their flight was considered as a dread portent in ancient days—thus Virgil declared that "When Rome in Ceasar fell":

In iron clouds concealed the public light,
And impious mortals fear'd eternal night:
Red meteors ran across the ethereal space;
Stars disappeared, and comets took their place.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday evening Nov 12th 1901 with the President Mr Leo. E. Swasden in the chair:

Mr Miller reported that the 1st nebular line in Nova Persei was the brightest line in the spectrum and that the hydrogen series had declined. The Coronal line was also visible and also a strong line in the violet.

The continuous spectrum continued to be visible.

Mr Miller suggested that the appearance of the disk was probably due to expansion.

The librarians report was received and adopted and also the report of Messrs Miller & Pursey re the address to Mr Elvins. The report was adopted and the resolution appears in the minutes of the Council meeting at which it was presented.

Mrs Merriman presented a note of a mysterious shower of stones on

The President requested observers to pay special attention to the Mare Crisium. the Alpine Valley and other Lunar features

Attention was also called to the expected return of the Leonids or November Meteors.

A. E. Wood,
G. E. Jamieson.
President.

J. Edw. Maybee
Recorder.

Meeting of Council held in the Canadian Institute Tuesday eve. Dec 3rd 1901.
The first business of the meeting was the presentation to Mr Andrew Elvins of an illuminated resolution of thanks for the gift of his fine 8" telescope. A copy of the resolution is annexed to this report.
The following gentlemen were nominated as officers for the coming year.

President -	Mr R. F. Stupart
1st Vice	Mr C. A. Chant
2nd "	Mr W. B. Musson
Treasurer	Mr Chas. P. Sparling
Secretary	Rev. Robt Atkinson
Recorder	Mr R. Duncan
Librarian	Mrs White
Curator	Mr Andrew Elvins
Council	Messrs Collins

Wetherbe, Maybee, J. C. Hamilton Miller, Rev T. C. Street - Macklem, & Miss Hunt, Capt. J. G. Ridout
Mr Arthur Harvey was then appointed Editor for the

To Andrew Elvins, Esq. Chairman of Toronto Astronomical Society
Past President and Life Fellow of the Toronto Art Society

(Sir) The members of the T.A.S. desire to express to you their appreciation of your kindness in generously presenting the Society with the telescope, which you have so long and so efficiently used for yourself. While fully concurring in your desire that the instrument shall be freely at the disposal of those members not possessing telescopes of their own, they recognize as their duty the careful preservation and keeping of this telescope, as one of the earliest used in the Prov. of Ontario for astronomical observation and research. They trust that you may be long spared to make use of the instrument yourself under the principle you have laid down; and they welcome this opportunity of putting on record their appreciation of the services which your life work has rendered to astronomy, in the keeping of this and kindred sciences before the public during the long period in which you were almost the only telescope worker in this Province. Signed on behalf of the Society

forthcoming volume of transactions which was ordered to be kept within the compass of 150 pages.
On motion the transactions of the Society for the past few years were authorized to be sent to the Litchfield Astronomical Society.

J. Edw. Maybee
Recorder

President.
P. S. The Editor is authorized to ask members for a synopsis of any paper read. Failing the receipt of this the Editor will not be responsible for errors or omissions occurring in reports of papers read.

J. Edw. Maybee
Recorder.

Minutes of the Regular Meeting of the Astronomical Society held in the Canadian Institute Tuesday evening Nov 26th 1901 with the President Mr Geo. E. Saunders in the chair

A letter was read from Dr J. T. Tyrell accompanying the presentation of several rare old copperplate prints of star charts.

Mr W. B. Musson was instructed to draw up a suitable resolution of thanks to Dr Tyrell for his valuable gift

The society authorized the purchase of Nasmyth and Carpenter on the Moon for the library.

Mr W. D. McPherson was duly elected a member of the Society.

The following gentlemen were nominated as Associates

Mr Wilton C. Eddis Chartered accountant by Messrs Saunders and Miller and Mr John ~~Ferguson~~ D Harquhar by Messrs Musson & Pursey.

Dr Marsh of Hamilton presented two lantern slides representing portions of Nasmyths model of the moons surface.

Under the head of predictions the president drew attention to the Andromeda meteors which should be visible on the morning of the 27th inst.

STARS FELL LAST NIGHT

Some Brilliant Showers in the Far West — Witnessed Before Dawn.

Phoenix, Ariz., Nov. 16.—A meteoric shower of great brilliancy and considerable length occurred here early this morning. The shower continued half an hour, and during that time more than 200 meteors were counted.

Los Angeles Cali., Nov. 16.—The fall of Leonids was quite marked in this city just before daylight. The display was at one time brilliant. One watcher counted 385 meteors between 4 and 5 o'clock, while the total number seen in this city is estimated at a thousand.

WINNIPEG.

Showers of Meteors—Baby Eaten by a Pig—Fatalities.

(Special Despatch to The Globe.)

Winnipeg, Nov. 17.—A meteoric shower was seen to splendid advantage on Friday about 2 a.m. in the vicinity of Rosenfeld, the junction point between the southern and Deloraine branches of the C. P. R. in Manitoba. The engineer and fireman of a train at that station at the time named report that the meteors were seen there by hundreds, "descending in perfect streams, as if poured out of a watering can on plants." The falling stars were of all colors, especially blue, crimson and white, and presented a grand sight. As they neared the ground they spread and burst, apparently into showers of sparks. Mixed up in the general fall were very large meteors, twenty times the size of ordinary falling stars. A trail was left behind, lighting up the heavens in a most extraordinary manner. At 3 o'clock on Friday morning a considerable fall of meteors was also observed by Winnipeggers when returning home.

At the Assizes on Saturday J. Hurst and wife were found guilty of removing and concealing goods with intent

Under the head of observations the president referred to the Leonid meteor showers which were observed on the morning of the 15th inst. Brilliant showers had been observed in California and the west but the sky in the neighborhood of Toronto was generally unfavorable and but few were seen.
Mr Pursey had noticed on Nov 15-19th an unusually large sunspot of peculiar formation.
On Nova Persei Mr Miller reported that no nebular form could be detected visually. His attempt to photograph it produced no satisfactory results.
A discussion took place on the Harvard telegrams relating to motions of points of condensation within the nebula first noticed by Perrin and Ritchie.
A comparison of photographs taken at an interval of six weeks showed considerable relative displacement of the points.
Mr Weatherbe showed photographs of the observatory and instruments of Mr Weston Wetherbee of Barre Center N.Y. an Associate of the Society.
The President drew attention to a note by Prof Campbell referring to the work done with the Polarograph during the

last eclipse of the sun.
It seemed to show that the light from the outer corona was reflected sunlight and that the inner corona was self luminous.
The brilliant spectacle afforded during the month by the close proximity of Jupiter Saturn and Venus was commented on.
Mr Miller on the 21st had observed Jupiter and Saturn in the field of the teleope at the same time when a low power was used, distance about 1° 05'.
The programme for the evening consisted of a short paper "On what may be done with a 3" telescope" written by the Rev: Robt Atkinson and read by Mr W. B. Musson.
The paper was full of encouragement to workers possessed of small instruments.
The President and several members also spoke on the same subject. Mr Elvins spoke of the utility of drawings made at the telescope.

Approved,
[signature]
President

J. Edes. Mayber
Recorder

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Tuesday eve. Dec 10th 1901 with the President Mr Geo. E. Lumsden in the Chair

Mr Munson called attention to the reports from Yerkes observatory re Nova Persei. It appears that the nebula surrounding the Nova is expanding in all directions and that changes are still occurring in the points of condensation shown in the Ritchie photos.

Mr Lumsden read a letter from Dr Brashear agreeing to lecture on Astronomy before the society some time early in January.

Messrs Eddis and Farquhar were duly elected Associate members.

The librarians report was duly received.

Under the head of observations Mr Wetherbe reported that he thought he had noticed a spot on the suns northern limb on Monday 9th Dec.

On Nov 28th he had observed Sat. & Jup. in the field of the telescope at the same time with a ½" eye piece.

Mr J. C. Hamilton reported a won-

dorpt mirage or cloud effect in Muskoka in August last as per annexed newspaper clipping. The Society made several additions to the list of officers nominated by the council, the list standing as follows when the nominations closed.

	BY COUNCIL	BY MEETING
Hon. Pres.		Hon. Mr Harcourt
President	Mr R F Stupart	Mr Geo. E Lumsden
Vice Pres.	Dr C A Chant	Mr R F Stupart
2nd V Pres.	Mr W B Musson	Dr C A Chant
Treasurer	x Mr C P Sparling	--------- --
Secretary	Rev. Robt. Atkinson	Mr W B Musson Mr J Collins
Recorder	Mr R Duncan	Mr J E Webber
Librarian	Mrs White	Rev. R Atkinson
Curator	Mr Andrew Elvins	Mr J E Webber Mr R Duncan
Council	Z M Collins	Mr Dewar
	Mr J G Ridout	Mr J Phillips
	Mr Weatherbe	Dr A D Watson
	Mr J E Maybee	
	x Mr J C Hamilton	
	Mr A F Miller	
	Rev. T C Street Macklem	
	x Miss Dent	

Mr Sparling however withdrew his name as treasurer and Mr Hamilton and Miss Dent withdrew their names as Members of the Council.

Mr R. F. Stupart then read a paper on "Electrical Disturbances during Auroral Displays" illustrated by charts showing the close similarity of the declination curves of the magnetic needle with the curves indicating the intensity of auroral displays for the same periods. It appeared as a result of the lecturers investigations that great electrical disturbances alone are not sufficient ~~alone~~ to produce auroræ but that atmospheric conditions must also be favorable as great magnetic fluctuations at Toronto were not always accompanied by local auroræ, but that the latter often appeared at a considerable away, e.g. the N.W.T.

J. Edw. Maybee
Recorder

Approved.
G. E. Lumsden
President.

Regular meeting of the Toronto Astronomical Society held in the Canadian Institute Monday evening Dec 23rd with the President Mr Geo. E. Lumsden in the chair.
A letter was read from Mr R. W. King enclosing resignations of himself and Mrs King for the ensuing year.
The President read a letter from Dr Brashear agreeing to lecture to the society on Wed. eve. the 8th of June on the "Making of a large telescope".
The Rev. Geo. F. Salton was nominated for membership by Rev. Dr Marsh and Mr C. B. Petry.
The librarians report was received.
Under the head of observations Mr Wetherbe reported that on Sat night 21st inst at 9.22 o'clock a faint star or planetoid had been occulted by the moon but that no reference to the phenomenon was to be found in the Canadian almanac or the Washington Montreal almanac
On the 19th inst 62 and Gamma Piscium were occulted by the moon
Mr Miller asked members to observe and sketch iota Orionis and report at next meeting
The Rev. Dr Marsh reported the formation of an Astronomical Society at Hamilton

No spots on the Sun.

The Toronto Astronomical Society

TORONTO, DECEMBER 12th, 1901.

As a Member of this Society you are requested to exercise your franchise as such by using the appended Ballot-paper for the purpose of voting for three Members of the Council for 1902, and, if you cannot be present on **Monday Evening, the 23rd instant,** to send it to me at Canadian Institute, Toronto. The candidates in respect of whom you are expected to vote are **any three** of those nominated for Council. In voting, you will therefore strike out ~~the names of~~ **all but three** of the names, otherwise your Ballot will be spoiled and cannot be counted.

Yours truly,

J. EDWARD MAYBEE, *Recorder.*

The Toronto Astronomical Society

BALLOT-PAPER FOR 1902

HONOURARY PRESIDENT,—The Honourable Richard Harcourt, K.C., M.P.P., Minister of Education.

PRESIDENT,—.....Mr. R. F. Stupart, F.R.S.C., Superintendent of the Meteorological Service of Canada and Director of the Toronto Observatory.

FIRST VICE-PRESIDENT,—..Mr. C. A. Chant, M.A. (Tor.), Ph. D. (Har.)

SECOND VICE-PRESIDENT,—Mr. W. Balfour Musson.

TREASURER,-- ....

SECRETARY,—.....Mr. John R. Collins.

RECORDER,—.....Mr. John E. Webber.

LIBRARIAN,— .....The Reverend Robert Atkinson.

CURATOR,—.....Mr. R. Duncan.

Wm J. E. Maybee

COUNCIL

Mr. Z. M. Collins	Mr. J. Phillips
Mr. R. Dewar	Captain J. G. Ridout
The Reverend T. C. Street Macklem, M.A., LL.D., Provost of Trinity College, Toronto	Dr. A. D. Watson
Mr. A. F. Miller.	Mr. J. Weatherbe

N.B.—If you cannot be present at the meeting of the Society on MONDAY EVENING, THE 23rd INSTANT, your Ballot-paper will be counted IF IT REACHES MR. MAYBEE AT ANY TIME before the vote is taken on that evening, PROVIDING IT BE SIGNED BY YOU.

SIG.....

.....ONT.

The new society begins its career with a number of good members and every promise of success. Much satisfaction was felt at increased interest in astronomy indicated by the formation of this society and its members were invited to attend Dr Brashears lecture.
The election of officers was then proceeded with as per nominations on the annexed ballot paper.
Owing to names being withdrawing a ballot for members of the council only was needed.
The gentlemen elected were Mr J. E. Maybee, Mr A. F. Miller. and Dr Watson.
Mr R. F. Stupart then nominated Mr Maybee as Treasurer, seconded by Mr Miller and carried.
At the suggestion of the President the gentlemen standing fourth in the election for council was then declared elected ~~to the council~~ to the vacancy so caused.
The list of officers for 1902 is therefore as follows

HONOURARY PRESIDENT,—The Honourable Richard Harcourt, K.C., M.P.P., Minister of Education.
PRESIDENT,—.....Mr. R. F. Stupart, F.R.S.C., Superintendent of the Meteorological Service of Canada and Director of the Toronto Observatory.
FIRST VICE-PRESIDENT,—..Mr. C. A. Chant, M.A. (Tor.), Ph. D. (Har.)
SECOND VICE-PRESIDENT,—Mr. W. Balfour Musson.
TREASURER,—..... Mr J. E. Maybee M.E.
SECRETARY,—.....Mr. John R. Collins.
RECORDER,—.....Mr. John E. Webber.
LIBRARIAN,— .....The Reverend Robert Atkinson.
CURATOR,—.....Mr. R. Duncan.

Council

The officers, past-presidents and the following gentlemen Mr A. F. Miller, Dr A. D. Watson and Rev T. C. Street Macklem. Mr Miller then read a paper on Nova Persei discovered by Dr Anderson of Edinburgh on Feb 21st last.

In this Paper Mr Miller brought together the observations made by him and reported to the society from time to time.

Messrs Paterson and Musson spoke in appreciation of the work done by Mr Miller after which the meeting adjourned

R F Stupart
President

J. Edw. Maybee
Returning Recorder