

Recording Secretary Report

Since the last annual meeting of the astronomical & Physical Society of Toronto, there have been held

- 22 Regular meetings
- 1 Informal meeting to observe transit of Mercury.
- 3 Council meetings.

Of the regular meetings two were of a public character, invitations having been issued to many other than the members of the society. These were held while Mr R A Proctor was in Toronto and were very largely attended and proved of much more than usual interest. There are now upon the roll of membership.

3 life members

Mr Chas Carpenter

Mr John Soldie

Dr Harriet W Smith 26

In the death of Hon Sir Adam Wilson the society sustains the loss of a most honoured life-member and a generous friend.

the active membership list
 numbers 37 including one
 non-resident active member.
 The corresponding members
 number 12,
 and since the incorporation of
 the society honorary membership
 has been conferred upon 6 gentlemen
 distinguished in the scientific world.
 The total number, therefore, ^{of ladies & gentlemen} who are
 connected by membership with
 this society is 58.

Besides active members there are a
 number of associate members
 who have occasionally attended the
 meetings, always made heartily
 welcome.

At the various meetings there
 have been read

24 original papers
 contributed by members of the
 society. These have embraced
 a wide range of subjects within
 the general field of astronomy and
 physics.

Several members have made careful
 records of observations which have
 been reported and discussed.
 In June 1890 a section of the
 society called the Opera-glass
 section was formed for the object
 of becoming acquainted with

constellation study and telescope work generally.

The section is under the leadership of Mr. Knowlton. Mr. Bell being Secretary.

In Sept 1891 S. Haratt & Smith jointly placed at the service of the Society an excellent 3 inch telescope suitably mounted.

This has been used by the operations section and is under the present care of S. Foster.

It is to be added that the meetings throughout the year have been very well attended and a still larger attendance is hoped for during 1892.

M. Hendray

Annual meeting

The annual meeting of the astron.
Physical Society held Jan 12/92
in St Luke's Hall.

The vice-president occupied the chair.
The president through illness was
unable to attend.

A note was read from Dr Haratt &
Smith who was unable to attend.
The minutes of the previous meeting
were read and confirmed.

Communications were received from

The Astronomer Royal

Mr Barnard of his observatory.

Mr D Watt, of Toronto and

Mr W P Peterson of Toronto were

duly elected active members.

The election of officers resulted as
follows for 1892

Hon President Hon G. W. Ross LL.D

President Mrs Carlmail M.A. F.R.S.

Vice President Haratt & Smith F.C. D.C.L

John H. Patterson M.A

Corresponding Secy G E Lumsden

Recording Secy Mr Hindray

Treasurer D J Howell

Librarian D. G. Ross.

From the list of gentlemen nominated
for the council Mr Arthur Hawley
desired to withdraw as other duties
would prevent him from serving.

~~The ballot~~ for the result of
the ballot for members of

council was the election of
 A. Elvins
 A. G. Miller
 J. G. Ridout
 G. G. Parsay
 D. Foster

M^r Elvins then resigned the chair
 to M^r J. G. Ridout, who addressed the
 meeting, thanking the society for
 having conferred the honor upon him
 and expressing his willingness to aid
 it by all means in his power.

The business being then continued
 the report of the Librarian was read
 and was read by M^r Miller.

That report showed the library to be
 in very good order indeed. The total
 no of books re being 216, some
 having been donated by observatories
 and scientific associations and some by
 private donors.

A list of the volumes was read and
 the report was adopted.

The treasurer report being next asked
 for M^r Howell read a summary of his
 accounts which showed the finances to
 be in a very satisfactory condition.

On motion of M^r Harvey and M^r Clark

The report was referred to the auditors
 to be presented by them at the next
 meeting.

M^r Howland briefly described his

was during the past year as
corresponding secretary. His courtesies
were in all parts of the world and
uniform courtesy had been extended
to the society by them.

The accounting being a report referred
to the meetings held during the year,
the papers read and the membership.
The reports of the secretaries was adopted
and the thanks of the society tendered them.
Mr. Elvins retiring vice-president
was then called upon for his annual
address.

He reviewed the progress of the society
since its incorporation, referred to
its aims and hopes, to the harmony
that existed in it, and assured
the members that his retirement would
in no wise interfere with the active
interest taken by him in the work
to be done.

Mr. Elvins' address was received
with the most hearty marks of appreciation.
Mr. Ross moved that the thanks of the
society be tendered to Mr. Elvins
and Mr. Miller the retiring officers
of the society, to whom so much was
due. Mr. Kirksey seconded the motion
and referred to the personal advantages
we had derived from intercourse with
these gentlemen.

The motion was carried amidst applause
and the thanks of the society presented

to Mrs. Elvira Miller by the
 Vice-president.
 It was moved by Mr. Laidlaw, seconded
 by Mr. Clark that the objects of
 the society be extended to the
 Mass of Snow namely the most Globe
 Empire world for their country in
 giving space for the fortnight reports
 sent by the secretary

carried
 Mr. Ross gave notice that he
 would move at the next meeting
 a resolution having reference to the
 time to be taken up in business and
 the time to be taken up in reading papers.

Among observations reported was one by
 Mr. Laidlaw of a Solide in Decrth passing
 south east from the Pole star.

After some further discussion on
 observations of Sun spots and of the
 Tropicism in Orion the meeting
 adjourned to meet Jan 26 at
 the residence of Mr. Laidlaw.

25 Jan^{ry} 1892
 Mr. Laidlaw
 Secy

John Laidlaw
 Pres. Secy

Astronomical and
Physical Society of
Toronto

Report of the Librarian
Presented at the Annual Meeting
January 12th 1892

A. F. Miller
Toronto

Astronomical & Physical Society
of Danube,
Report of the Librarian, Jan^y 12th - 1892

Mr President and gentlemen,

During the broken period since the inaugural meeting, the Society's library has been the recipient of numerous gifts, from Public Observatories, kindred societies, professional and amateur astronomers and private donors. Where nearly all the applications of your Secretary have met with such prompt and liberal response, special mention is perhaps scarcely desirable. The Society, however, should never forget the deep obligation under which lies to the U.S. Naval Observatory at Wash^{ington} for repeated presents of splendid volumes with almost every branch of astronomical science. The Smithsonian Institution has also largely added to your permanent literature; and cannot help mentioning the gifts of the Royal Observatory at Kiel, of the Reich Observatory and of the Observatory of Prins- College Dan at Dunsink.

Among kindred societies, the British Astronomical Association and the Astronomical Society of the Pacific, deserve your special thanks more particularly as the character of the public

issued by these organizations, is directly suited to the needs of the amateurs. The Royal Astronomical Society has laid us under obligation for the monthly bulletin, commencing with No 7 of Vol II; and I think we may indulge the anticipation of receiving this valuable publication with regularity hereafter.

Distinguished Astronomers have presented the Society with reprints of important papers published ^{by them} in the scientific journals. Without anticipating the full list I am about to read I may just mention Prof. Burnham ^{W. J. F. Gore}, Dr. Huggins and our talented fellow-member Dr. Morrison of Washington. Mr. W. F. Denning too has been a kind contributor.

Friends have risen up nearer home to give the library much substantial aid, and that in a manner so quiet and unobtrusive that their absence knows what the gift has done. The admirable volumes constituting the John Goldie Donor though catalogued in the former Report really to the past year's receipts. I am glad to say that owing to the judicious selection of these books, they have been widely used by the members in fact, so constantly were they in demand that the Librarian has never placed one of them on the shelf. We Goldie has just supplemented this gift by another. He has presented to the Society seven complete volumes of the Lidereal Messenger (1888 to 1891) and promised to donate other volumes of the same publication for coming;

Another donor who declines to permit mention of his name, has given us several valuable books including ^{the} Chambers' astronomy.

As to the Condition of the Library I deem it my duty at this time to call attention to the fact that many works mentioned in the catalogue are unbound books, small pamphlets, or numbers of periodicals. I hope that before long the Society will see its way clear to devote some funds to the binding of these; as otherwise they will ere long be destroyed or lost.

I repeat that during my official term it has not been in my power to render the Society that good service which, when accepting the post I hoped to do. I have found it impossible to devote the time to the duties of the office which was necessary for their proper performance, and in other ways I felt myself incapable of managing the library to the best advantage. In common with you all therefore I gladly anticipate better results from the improved methods which doubtless my successor will introduce.

I am ready to deliver over to the new librarian all the books and pamphlets mentioned in the Catalogue except such as are in the hands of members, of which latter I have ^{prepared} a detailed ~~list~~ list.

General list of works in the library of the A. & P. Society of Toronto dated according to sources from whence seen

Observatories

U.S. Naval	47	{ observations, Reports & hand
dick	3	Vols
Harvard College	12	{ Drafts memor Annual Repts Statements of work
Cincinnati	7	Observations
Warner	2	Report & pan.
Washington, S. Louis	1	observation
Royal, Kiel	6	"
Prin Col. Dub. Dunsink	4	Vols "
Carlton College	1	Publ ⁿ "
Jaytown	1	"
Royal, Berlin	5	numbers of publ ⁿ

Institutions Societies

Smithsonian Inst ⁿ	26	{ Publications
+ charts		
Royal Astronomical Socy	4	{ Monthly lists
Astronomical Socy of Pacific	7	" Publications
British Astron Ass ⁿ	10	" Journ ^l
Royal Socy Canada	3	Vols
Royal Socy - England	1	Publication

Individuals

Johns Hopkins	7	Books
Books	7	Vols List use
Several messages (Vols)	19	Pamphlets
Prof Bunker	15	{ beside hand
Dr. Joseph Morrison	8	almanacs & or
before	2	pamphlets
W. H. Deane	2	"
S. E. Peck	2	"

found 190

Jan - 190

Dr. Wm. Higgins

1 Address

P. W. Bachhauer

1 Pamphlet

Miscellaneous & duplicates 24

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The regular meeting of the Astronomical and Physical Society, was held at the residence of Mr A. F. Mullar 200 Carlton St
 July 26th 1892.

Mr J. B. Paterson M.A. Vice President occupied the chair

The minutes of the Annual meeting were read and confirmed

Owing to the illness of the Recording Secretary Mr Lindsay. Mr Howell acted as secretary.

Mr Ross spoke in favor of his resolution. That the time of routine business be limited to one hour in order to give sufficient time for the discussion of papers. After some discussion the resolution was withdrawn on the understanding that the routine business would be transacted with despatch and that the Council should ^{attend} to many matters of detail that have usually occupied the time of the meetings.

The Auditors reported that they had examined the Treasurer's accounts ~~and report~~ and found them correct and on motion of... the Treasurer's report was adopted.

W^m Houston Esqr M.A. was nominated by Mr Lindsay and ^{Mr} Elvins for Active membership

A communication was received from Lady Wilson thanking the society for the sympathy expressed in their resolution of condolence on the occasion of the death of Sir Adam Wilson and assuring ~~the society~~ ^{them} of her deep interest in the proceedings and welfare of the society.

A communication was received from the Hon. G. W. Ross Minister of Education ^{the hon. and} accepting ^{Honorary President} of the office. Mr. Ross reported the receipt of a number of the Proceedings of the Royal Astronomical Society and stated that he was very doubtful whether he could continue to hold the office.

Mr. Lumsden reported the observation ^{on Jan 4} of a peculiar ^{lunar} phenomenon in the form of a cross. Moon full 40 minutes high the rays disappeared in about 15 minutes.

Mr. Miller gave notes of his solar observations. The Sun being very active spots being observed in both the northern & southern hemispheres of the Sun.

A Paper on Electricity as a source of light by Clarence Bell was ~~reported~~ announced for April.

The next meeting was announced to be held at Dr Foster's office July 9th.

A paper on
 by Mr G. L. Lumsden was read and received ~~to~~ with a good deal of interest.

A paper which appeared in the Scientific American Supplement entitled Extraordinary Luminous Phenomenon observed on the Sun by M. J. Javelot of Paris which your Miller had called attention was read by request.

A Paper on Amateur Astronomers in the Popular Science Monthly by [unclear] was read and proved full of interest and encouragement for Amateur workers.

The meeting then adjourned.

D. J. Bonnell
acting Secretary

Larrah W. Smith
Vice President

2022 cut

ASTRONOMY AND PHYSICS.

Auroras—Inter-Stellar Ether—The Largest Sunspot Visible for Years—Jupiter and Venus.

At the last regular meeting of the Astronomical and Physical Society of Toronto, the chair was occupied by Dr. Larratt W. Smith, Q.C., for the first time (owing to indisposition) since his election as vice-president. Dr. Smith expressed his thanks for the honour conferred upon him, and promised the society his heartiest co-operation in its work. The librarian reported the receipt of publications from the Royal Society, the Royal Astronomical Society, the Astronomical Society of the Pacific, and from Professor Hale of Chicago.

Mr. A. F. Miller called attention to the fact that the largest sunspot visible for some years is now well placed for observation, and will not disappear by rotation until the 18th of February. The group, which is situated in the solar southern hemisphere, may easily be seen by the naked eye, the precaution of using smoked glass being, of course, taken. In a small telescope, Thursday morning, the spot, or series of spots, was centrally situated on the sun's disc, and formed a most charming object. Two of the individual spots are themselves of great size; the whole group occupies perhaps as much as one-tenth of the visible solar surface. Aurora and a magnetic storm were observed about the date of the appearance of the group.

Messrs. Miller, Harvey, Elvins, and the chairman referred to the recent remarkable and memorable conjunction of Jupiter and Venus, and to the apparent near approach of the moon to these planets on the night of Sunday, the 31st of January. Mr. Harvey read an account of the recent discovery, two degrees south of Chi Aurigæ, of a new star at present known as "Copeland's Nova." Examinations of photographic plates taken periodically at the Harvard Observatory show that the star made its appearance between the 1st and 10th of last December, but it was not noticed by any observer until about the end of January, when it was discovered in the sky by an amateur whose name has not transpired.

The third regular meeting of the Astronomical and Physical Society for 1892, was held at Dr. Felt's office, on the evening of the 9th of February, having W. Smith Esq., Q.C., D.C.L. in the chair. In the absence of Mr. Lindsay, Mr. Fawcett acted as Recording Secretary.

Before proceeding to business Dr. Smith explained that owing to indisposition, he had not attended any of the meetings held since his election as one of the Vice Presidents he had, therefore, been unable to thank the Society, which he did very cordially, for the honour conferred upon him. While, for various reasons, he would have liked that some one else had been elected to the office he accepted the position of Vice-President fully appreciating its importance and determined to do all in his power to advance the interests of the Society. In this he knew he would have the assistance and co-operation of all its members. Dr. Smith resumed his seat amid applause.

The Minutes of the last meeting were read and confirmed. Mr. Wm. Houston, 11 Cowther Avenue, was elected an active member

The motion of Mr. Davis, second-
ed by Mr. Pursey, Mr. John Hollingworth,
& ^{Leatrice, Mrs. K. H. H.} was nominated as a
Corresponding Member.

In the absence of the Librarian,
Mr. Miller reported the receipt of
publications of the Royal Society,
the Royal Astronomical Society,
and the Astronomical Society of the
Pacific; also a Report sent in by
Prof. Hale, of Chicago.

After some discussion as to
the most suitable place for keep-
ing the Society's library, Mr. Arthur
Harvey said he had no doubt
that, if a proper book-case were
provided, the Canadian Institute
would allow it to be placed in its
building. Mr. Harvey's suggestion
was received with applause. It was
understood that the subject would
come up for consideration, when
the Librarian was present.

Observations being called for,
Mr. Miller ^{draw} attracted attention to the
fact that on the 6th of February
the largest sunspot visible for
some years, had re-appeared by
rotation. The group was so
large that its presence could
be detected with the naked eye,
care being taken, of course, to
protect vision by using a smoked

glass. The return of the spot had been marked by aurorae and a magnetic storm.

Mr. Miller, Mr. Elvins, Mr. Harvey and the chairman referred to the recent noteworthy conjunction of Jupiter and Venus, regretting that cloudy skies obscured vision on the night of the 5th inst. when the planets should have appeared as a beautiful and most lustrous double star. Mr. Miller stated that with a sextant, he had made observations which proved that Venus was moving at the rate of about one degree per day. The magnificent spectacle afforded by the apparent near approach of the new moon to the planets on the night of Sunday, the 31st of January was alluded to.

Mr. Harvey read from the New York Herald, an account of the discovery by some amateur, of "Popelond's Nova," a new star of the 5th mag. situated about two degrees south of Chi-Aurigae.

The Secretary read a letter from the Secretary of the School of Practical Science, who applied for a list of the members of the Society in order that they might

receive invitations to the formal opening of the school on the 24th inst. The Society was reminded that on Saturday the 13th inst., Prof. Baker would deliver at the University, a lecture on "The Systems of Astronomy" and that on the 5th March, Prof. Houston would lecture on "Ampère: his life and work".

Mr. Ellis read a series of communications from Dr. W. A. Veeber, of Lyons, U.S., relative to certain 2 day auroral periods which he believes to exist, and to the efforts he is making, systematically, to procure observations not only respecting the presence but also the absence of auroras. His success had been gratifying, and he invited the members of the Society to assist. Blank forms to be filled up and sent to him monthly were distributed. After some discussion, the Corresponding Secretary, on motion of Mr. Harvey, seconded by Mr. Miller, was instructed to communicate with the Director of the Toronto Observatory and the Chairman of the High School Board at Port Arthur with a view to obtaining monthly reports to be transmitted to Dr. Veeber. Mr. Ellis headed in

DISCOVERY OF A NEW STAR

IT IS OF THE FIFTH MAGNITUDE AND WAS FIRST SEEN BY AN UNKNOWN SCOT.

[BY TELEGRAPH TO THE HERALD.]

Boston, Mass., Feb. 5, 1892.—A new star has appeared in the firmament. About two degrees south of the medium bright star "Chi-Auriga" it may be seen with a good opera glass. It is of the fifth magnitude.

The stranger first came within the range of astronomers' notice about December 10, but it was not observed by any of the Argus-eyed until February 1, when Dr. Copeland, the Scottish astronomer, saw it. Dr. Copeland was not, however, the discoverer, for in a cable despatch to Professor Pickering he ascribes the honor to an anonymous observer. Not until this anonymous Scot abandons his reserve the newcomer will be known as "Copeland's nova" in honor of the man who first examined it and discovered that it contained bright lines.

Temporary stars have been observed occasionally in the past—stars which suddenly blaze out and flame away for a week or a month or a year and then fade out of sight. Mayhap the Star of Bethlehem was one. In 1672 one appeared in Cassiopeia, and in 1890 another in the Crown. The one which is now brought to the notice of the scientific world is, as before mentioned, about two degrees south of the star Chi in the constellation Auriga. Besides these temporary stars there are variable (one hundred or thereabouts) stars which at long intervals become visible because of their nearness. But a new star is quite a different object. It is a phenomenon of most enthralling interest. It is, of course, hardly probable that it is an infant, for more likely it is a star upon which a tremendous volcanic eruption is taking place, or, more wonderful yet, a sun into which another sun has crashed.

PROVING THE DISCOVERY.

The liveliest satisfaction is experienced by Professor Pickering and his associates at the Harvard College Observatory, for while they have not the honor of the discovery they alone can prove—and have proven—that it is a discovery. Readers of the HERALD well know the photographic telescopes of Harvard call the roll of the heavenly host every night and each glittering point records itself on their plates. There is no escape for any.

a Paper by Dr. Veeber on the Zodiacal light. Much interest was manifested in Dr. Veeber's work.

Mr. Harvey read a selected series of extracts from a pamphlet on "Interstellar Ether" received from Mr. Alfred Senior Murray Perry, of Waco, who divides this ether into thermine and electric, and who holds some novel views entitled to careful consideration. The subject was discussed by Messrs. Dennis, Clark, Miller, Harvey and the Chairman.

The Society then adjourned to meet February 23rd at Tel. 94 Summerhill Avenue, the residence of Dr. Harrott Smith.

Approved,
John A. Galeman

2nd Vice President:

G. E. Sumner

Acting Recording Secy.

REPORT OF COMMITTEE.

To the President of The Astronomical and Physical Society of Toronto.

Your Committee appointed to take charge of the preparation and printing of The Transactions of your Society during the past year, beg leave to present the following report:--

Your Committee has drafted from the Minutes of the Society and from the papers read during the year, the Report, in manuscript, hereto appended. The major portion of this Report has been read over to and has been approved by the Council.

For the printing of the said Report, your Committee received from three firms tenders based upon estimates for two hundred and fifty copies of a pamphlet of about thirty-six pages. The lowest tender was made by Messrs. Brough & Caswell, who have offered to print and bind in first-class style, such a pamphlet for \$35, or for \$42, if five hundred copies be ordered. Should the Transactions exceed thirty-six pages, which it is likely to do by a few pages, the firm will print it at proportionate rates. If the funds at the disposal of the Society warrant it, your Committee would recommend the acceptance of the said tender, especially as the Report will be uniform with the Constitution, printed by the same firm, available copies of which will be bound with the Report.

Your Committee would further recommend that two copies of the Transactions be presented to each active member, and one copy to each honou-

ry and corresponding member; the former to have the privilege of purchasing as many additional copies as he pleases at the rate of ^{half price} ~~cents each, being a slight advance on cost~~; the latter to have the same privilege but at the rate per copy printed on the title page of the Transactions.

Your Committee would further recommend that the custody and the distribution of the Reports be committed to the Treasurer of the Society, with instructions that he shall, when required, make a statement showing the disposition made of the Reports and the receipts, if any, derived from their sale; also that it be the rule to present to each newly elected active member, on payment of his fee, a copy of each of the Reports issued prior thereto, such copies, however, not to exceed in number one for each of the three years immediately preceding.

All of which is respectfully submitted.

D. G. Howell

Chairman.

Toronto, 24th February, 1892.

Sp. York of Publicenter
Committee

February 19/91

The fourth regular meeting of the Astronomical & Physical Society was held at the residence of Dr. Harriet W. Smith, Summerhill one July 23rd

On request of Dr. Smith Mr. J. A. Paterson presided in the chair.

The minutes of the previous meeting were read and confirmed.

Mr. Hollingworth was elected Mr. Lumsden stated that he was in a ^{position} authorized to say that Mr. Ross would not be able to attend to the duties of Librarian this year as he would be for the most part away from home, and that he desired to resign. It was therefore moved by Mr. Elvins, and Mr. Lumsden that the resignation of Mr. Ross ^{be accepted} and another member appointed to fill that office.

This was carried by Mr. Elvins then ^{was named} Mr. G. G. Pursey as Librarian and the voice of the meeting being unanimous Mr. Pursey was declared elected Librarian.

In answer to a question regarding a place for the library Mr. Harvey said that ^{as} ^{soon as} the Librarian was able to report particulars in regard to the library in his charge, ^{that} a place in the Canadian Institute building ^{might} ^{be} provided. The meeting, appreciating Mr. Harvey's kind offer, were quite satisfied to leave this matter with Mr. Harvey and Mr. Pursey.

Considerable correspondence on the subject of the recent auroral displays was read.

Mr Elvins had received two letters from S. Veeder which were read. A letter from M. ^{John} Worthington on the subject of the aurora was not described ~~but was presented to~~ ~~the~~ also a description of the rose aurora of July 17th by Mr Harvey.

Mr Harvey presented also a series of drawings of the sun spots observed at the same time. One very large spot he believed to have been very shallow from the appearance of the nucleus when the spot was just upon the sun's limb.

Mr Miller had remarked the varying spectrum of the aurora; in the west red and green lines being seen and in the east green lines only. To the unaided eye even, there was a greenish tinge in the east.

Extracts from the press were also read. One read by Mr Pursey gave a theory accounting for the phenomenon of the aurora and opened up the question as to whether in the Southern hemisphere there was coincidence of auroral displays.

Mr. Rowland had written to Prof. Carlsson
 in the subject of communicating with
 Dr. Veder and had a reply received from
 Mr. Carlsson to the effect that the
 observers at the magnetic observatory
 had been instructed to co-operate
 with Dr. Veder. Mr. Carlsson had
 not been well for some time past
 and was still unable to go out.
 To enable Mr. Hollingworth to
 continue his observations & accom-
 pany it was decided to forward
 Dr. Veder's letter to him.
 The receipt of a volume ^{of observations} from Berlin
 on ~~the~~ was reported: the proceedings
 of the laws of Cosmic Physics.
 Mr. Howell reported that he expected
 some slides of nature objects for the evening.

Mr. Hindley reported that the printed
 notices of the place of meeting were
 about used up and suggested that
 post-cards, printed, would answer the
~~purpose~~ purpose. This matter was
 accordingly left in the hands of Mr.
 Howell and Mr. Hindley.

The paper of the evening was read by
 Mr. Rowland on "A plea for the
 retention of the terms 'atomic and
 molecule'."

Mr. Rowland reviewed the "atomic
 theory" and the reasons brought
 forward for dispensing with the

The fifth regular meeting of the astronomical & Physical Society was held at the residence of Mr J. A. Paterson, 23 Walmer Rd March 8th 1892

Mr Paterson desiring of be at liberty during the evening requested Mr Elvins to preside in the chair.

The minutes of the previous meeting were read and confirmed.

The subject of a place for the library was discussed and it was decided that the books should for the present remain with Mr Pursey the librarian, at his residence 189 W. Bond St.

Mr Pursey very kindly offered every facility to the members who may desire to avail themselves of the use of the library.

Mr D. O. Cameron of Toronto and Mr R. B. Ellis of Toronto were nominated for active membership by Mr Newbourn and Mr Lumsden

Mr D. R. Keyes of Toronto was nominated for active membership by Mr Clark and Mr Hawley.

A Communication was received from Rev J. L. Espin of Low Law Eng. requesting the Society to co-operate with him in the revision of "Webb's Celestial objects". Mr Elvins, Mr Lumsden and Mr Miller will form a committee to consider this matter.

Dr Chandler of Harvard College sent forward an essay on the system of the variable star Algol. This was considered of such importance as to require a special evening for reading and the next meeting was selected

Dr. Haw of Port Arthur will cooperate with
Studer

for the purpose of observing auroral.
A communication from Dr Studer was also
laid aside to form the subject for another
special meeting.

A letter was received from Mr. H. Sanderson
of Yagus reporting some ^{interesting} observations.
The librarian reported the receipt of a volume
from the Astron. Society of the Pacific
and also the report of the ^{Wolsingham} ~~Society~~ ^{Observatory}

On motion of Mr. Lindsay and Mr. Pursey
the thanks of the Society were tendered to
Mr. G. E. Lawrence for his kindness in placing
the Annual "Transactions" in the hands of the
members, immediately on issue from the
press.

Mr. Harvey reported his observations of the
sun spot which re-appeared by rotation on
March 1st and presented ^{several} sketches. He
remarked that the re-appearance of the spot
did not take place according to his calculations,
being somewhat retarded. Mr. Miller agreed
with Mr. Harvey in this.

Mr. Miller reported his observations of the
"nova" in Auriga which he had been able
to examine with the spectroscope. The result
was that Mr. Miller considered the star to be
a mass of glowing gas of very high temperature
and low density, and that it would gradually
fade away and become invisible.

He remarked particularly that the spectrum
gave almost entirely bright lines without
any continuous background.

14/11
 M^r Pusey
 M^r ~~Lambert~~ read a report of the
 discovery of a comet by Prof Swift.
 It is R.A. $18^{\text{h}} 57^{\text{m}}$ and decl. $31^{\circ} 20'$ S. and
 can be seen with an opera glass.

The paper of the evening was read by M^r J.M.
 Clarke M.A. on Energy.
 The subject was treated exhaustively, all
 the various theories being reviewed and
 the rigorous analysis of the problem of
 determining the amount of heat radiated
 by the sun, the source of all energy, was
 given.

A most animated discussion followed
 M^r Clarke's paper.

M^r Paterson read some extracts from Langley's
 new astronomy, bearing upon the subject
 and M^r Harvey addressed the meeting at
 some length in review of the essay.

Attention was called to the fact that
 M^r Lodge of Chicago in his work on
 Solar heat does not admit the contraction
 of the sun's globe as the source of energy. The
 chairman and some other members were inclined
 to give M^r Lodge's theory at least a place.

Second, M^r Clarke answered several questions
 relating to points treated in his paper and
 had the thanks of the meeting for his careful
 preparation and popular style.

The next meeting was arranged for March 22
 at the residence of M^r G.G. Pusey 189 W. Canal St.

John W. Patterson
 Vice Pres^t

This Sunday

The sixth regular meeting of the astronomical & physical society for 1892 was held March 22nd at the residence of Mr. J. G. Pursey 189 W. Canal St. The vice-president Mr. J. A. Paterson in the chair.

The minutes of the previous meeting were read and confirmed.

Mr. Arthur Harvey referring to the report of Mr. Blackie's paper on "Energy" ^{and} at the last meeting, as contained in the minutes, desired to bring before the meeting the advisability of publishing such papers, which contain results, as Mr. Blackie's did which are different from those usually accepted. This would establish priority. The matter was discussed by some of the members though Mr. Harvey did not wish to make a formal motion in the matter. It was admitted that the press of the city have always been very courteous to the society and have never refused to print even lengthy synopses of papers read, and considering that the society still young, was not able to undertake the frequent publication of papers, ~~the~~ the matter of issuing papers in pamphlet form was allowed to stand over in the meantime.

The following named gentlemen were duly elected active members of this society.

Mr. D. O. Cameron B. H. & Emily Chambers Toronto

Mr. R. B. Elliot Toronto.

Prof. D. R. Keys 36 Avenue Rd do

The meeting duly then stated that the nomination of Dr. E. A. Mearns

made some time ago had, unfortunately, not been recorded in the minutes and desiring to amend the error moved that Dr Meredith be ~~declared~~ ^{elected} a ~~member~~ of the without further formality. This was carried unanimously and Dr E. A. Meredith Toronto declared duly elected an active member of the society.

Mr S. Newbner seconded by Mr Howard nominated for active membership.

Mr August Raymond 5 Rose Ave Toronto
Mr Chas. Cluthe 53 Well Pl do

The Librarian reported the receipt of volumes from the British Astron. Assn.; the Royal Society; the Lick Observatory;

The committee appointed discuss the revision of "Webb's Celestial Objects" reported as follows: That a chapter on Celestial Photography and a chapter on Spectroscopy would be valuable additions to the work. That if the Society desired to have the matter in the hands of the committee, these suggestions would be forwarded to the Rev J. E. Espin Lowland, England who had asked the co-operation of this Society in matter.

The meeting was unanimous in expressing entire confidence in the committee and Mr Howard stated that he would communicate with Mr Espin without further delay.

Mr Newbner read the titles of several German scientific publications and explained their ~~method~~ of rules

with regard to the admission of members, also very kindly offered to translate any ~~the~~ papers contained in the publications, for the benefit of the society.

Mr Miller read an extract from a private letter received from Mr John Goldie of Galt life member of this society. Mr Goldie had very kindly donated the sum of ten dollars to the society's fund for the procuring of astronomical lantern slides.

Mr Miller moved a vote of thanks which was carried unanimously, & Mr Goldie for this his second substantial evidence of his ~~desire~~ ~~for~~ good will towards this society; the corresponding secretary was requested to convey the feeling of the society to Mr Goldie.

Mr Lewis in referring to correspondence he had had with Mr H. Dunsdon of Leeds, stated that the 14 satellite of Jupiter had been specially observed by Mr Dunsdon, during last year and some peculiarities of colour noted; he wished that other members would during this year make systematic observations of this satellite with a view to determining whether differences of physical conditions exist in the system of Jupiter.

Mr. Miller then read from Mr. Galdie's letter a description, particularly lucid, of a "paraselené" or lunar halo observed on the morning of March 19 at 2:20 a.m. At the time the moon was S E by S at alt. of 23° . at a zenith of 27° a bright halo was seen each side resting upon a mock moon. The false images were very bright. Two streaks of light passed through the moon one to the N.W. and one nearly to the zenith.

Commenting upon the phenomenon Mr. Hawley stated the cause to be the dispersion of light by particles of ice in the upper regions of the air, which act as prisms and stated that at Ben Nevis in Scotland the phenomenon is very frequently seen. accounts of these phenomena may be found in the records of the Edinburgh Observatory.

Mr. Hawley was anxious to see diagrams of the phenomenon and Mr. Miller stated he would ask Mr. Galdie for a sketch. A letter from Prof. Hale of Kenwood Observatory Chicago was read, mentioning the success recently achieved in photographing the sun-spots and protuberances last Feb'y.

The paper of the evening was the one
 contributed by Dr Chandler of Harvard
 College on the System of Algol.
 The theory brought forward and apparently
 sustained by a rigorous analysis is
 that the star is accompanied by a
 dark body both revolving about a
 central dark body, the plane of motion
 being inclined at an angle of 20° to
 our line of sight.

The paper was discussed at some length
 and some objections to the theory brought
 forward. The principal difficulty is
 the way of accepting the theory seemed
 to be that it conflicts with the
 nebular hypothesis now so generally
 received.

The centre of a system according to the
 hypothesis should be hotter and brighter
 than its attendants. The revolving bodies
 controlled by it would certainly become
 cold and dark before the primary
 but here we have the centre a dark
 body and the satellite bright and glowing.
 Mr. Kummer stated that he would com-
 municate with Dr Chandler and state
~~these~~ objections with a view to obtaining
 his explanations.

The meeting then adjourned till April 5th
 at Dr. Foster's Office
 The building
 Lee Street.

Larret & Smith
 V. P.

"WEBB'S CELESTIAL OBJECTS FOR COMMON TELESCOPES."

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To the President of the Astronomical and Physical Society of
Toronto.

Your Committee to which was referred the Reverend Mr. Espin's letter inviting corrections and suggestions to be used in revising Webb's Celestial Objects for Common Telescopes, begs leave to report as follows:--

(1). That while the last edition of the late Canon Webb's delightful and useful manual, in many respects, leaves but little to be desired, your Committee learns with pleasure of the intention of the publishers to reprint the book, as it will afford an opportunity to introduce matter which, in the opinion of your Committee, would enhance its practical value to the general student as well as to the amateur observer. Your Committee refers to the subjects of Spectroscopy and Celestial Photography, with respect to which, at least, an elementary knowledge is daily becoming more and more desirable and concerning which something in harmony with the general character of the book could be said without adding materially to its size or cost. Your Committee would suggest that a proposition to this effect be submitted for the consideration of the editor.

(2). That your Committee would recommend that the attention of the editor be drawn to the advisability, on behalf of his readers, of inserting, on thin paper, a series of plates representing some noteworthy objects such as sunspots, planets, nebulae, and familiar double, triple, and multiple stars and stellar clusters, as seen in common telescopes.

2.

(3). That your Committee has been unable to obtain any corrections to be transmitted to Mr. Espin.

(4). That your Committee considered various other matters of detail, such as including in the new edition a few charts of the more notable constellations; re-casting certain of the constellation lists in Webb so that they shall correspond more nearly with Proctor's Smaller Star Atlas, which is understood to be intended as a companion to The Celestial Objects; altering the shape of the book so as to make it longer and thinner; changing the form of certain of the contents of the book so as to provide more room without adding to its bulk, etc., but on these points your Committee felt a delicacy in volunteering its views, especially as it knew the best interests of amateurs could not be in better hands than those of Mr. Espin.

All of which is respectfully submitted.

(Signed) G.E. Lumsden,
Chairman.

Toronto, March 23rd, 1892.

The seventh regular meeting of the
Astronomical & Physical Society ^{inc 1892} was held
at Dr Foster's office April 5/92

The vice-president Dr Lanatt Smith
occupied the chair

The minutes of the previous meet-
ing were read and confirmed
Mr A Symon, Post office Toronto
Mr Chas. Clutys, 53 Wellington place as
were duly elected active members of
this society

Mr Hubner seconded by Mr Lumsden
proposed for membership

Mr John J Davidson, 65 St George St Toronto
Mr C. Nordheimer, Glen Egan as

Mr Lumsden seconded by Mr Miller proposed
for active membership

Mr C. P. Spauling of Toronto.

Mr Miller referring to the report read
at the previous meeting of Mr Goldie's
observations, stated he had received
a sketch of the lunar halo of March
19th from Mr Goldie and this was passed
among the members for inspection.

The corresponding secty. read letters from
the Secretary of the Royal Society,

Prof Kirkwood, Indiana Riversides

Mr J. L. Gore, Ireland

Dr Morrison, Washington

Dr Morrison gave some hints of practical
value in the matter of preparing issuing
reports containing a good deal of algebraic
notation &c. He referred to his own

work on "Trigonometry" which had been printed in Toronto and very kindly donated to the Society 2 copies of the work through the Canadian Pub. Co. The librarian reported the receipt of volumes from the British Ast. Assn. & the Royal Ast. Society, Mr Paterson read a letter from a gentleman in Winnipeg, ^{to show} how wide-spread ~~the~~ are the transactions of this Society, as recorded from time to time in the press. The writer referred to ~~the~~ a pamphlet, a copy of which he forwarded and advised the Society to consider some ideas he had introduced. The subject was hardly within the range of the Society's studies, a courteous acknowledgement of receipt of letter and pamphlet was about all that could be given.

Mr Lurwood addressed the meeting on several items of business.

He stated that he had forwarded to Mr Soldie of Gack the thanks of the Society for his donation to its special fund; also that he had written to Chandler of Harvard College, giving the objections which had been raised to the theory of the variability of Algal; and that he had forwarded to Dr Veder the reports of observations of aurorae by Mr Hoellingworth of Muskoda.

Mr Lurwood called attention then a matter

which had been overlooked for some time viz: Dr Southford Fleming's proposal for a system of Universal Time ~~to commence~~ to commence with the 20th century. The thought a council meeting should be called to consider the matter.

This was admitted but it was pointed out that it would be necessary to have the co-operation of the President of the Society Mr Chas Carpmael and it was decided to defer action until Mr Carpmael could be seen and a meeting arranged at which he could be present.

Several interesting reports of observations were received from Mr Miller, & Mr Hawley. Mr Miller had been quite successful in observing Mercury at the eastern elongation and had compared its brightness with that of Aldebaran ^{which} and found it exceeded.

Mr Hawley had been successful in observing Venus before sunset getting the telescopic image altogether free from the flare that surrounds it in the evening.

The paper of the evening was then read by Mr Elvins. This was a contribution by Dr Vreder of Lyons viz: on the "Zodiacal light".

The writer treated the question exhaustively and clearly. The paper which was in pamphlet form is in the library of the Society.

After the reading of the paper a short discussion followed took place, after which the members were invited by Dr Foster to adjourn to one of the other rooms in the hall where preparations had been made by Mr Howell to exhibit the society lantern slides. These include some very fine views of the moon recently received from the Paris observatory and photographed and prepared for the lantern by Mr Howell.

The remainder of the evening was enjoyably spent in this manner and the meeting adjourned till April 19th at the residence of Mr Arthur Harvey Rosedale.

~~that held by~~
~~held~~

The paper for that evening was announced "Magnetism and the Dynamics" by Mr Clarence Bell

that held by
 Rosedale.

L. M. S. M. S.
 V. P.

The eighth regular meeting of the astronomical and Physical society for 1892 was held April 19th at the residence of Mr Arthur Harvey Rosedale, St Laurent Smith in the chair.

The minutes of the previous meeting were read and confirmed.

A letter ^{was read} from Mr Carpmail ~~was read~~ who ~~was~~ unable to attend the meeting which he requested. Referring to a lecture which he had delivered before the Y.M.C.A. Mr Carpmail ~~said~~ wrote that he would be happy ~~to~~ give the substance of it at a meeting of the society some evening but as he was liable to be called away from Toronto could not say definitely when.

Nothing further had been done in regard to the question of the proposed change in time reckoning, but it was requested that Mr Carpmail would be consulted before next meeting about the matter.

The following named gentlemen were duly elected active members of this society:

Mr S. Noskeimer, St. Egey's Toronto
 Mr C. P. Spaulding, ^{the Victoria} ~~Victoria~~ do
 Lt Col John Davidson Toronto

Mr Hubner and Mr Lockhart nominated for active membership

Mr W. Alexander ^{resident} do Toronto

Capt Hay

63 St George St Toronto

M^r Friday seconded by M^r Miller
 nominated as corresponding member
 Rev W. J. Murphy O. M. J. Ottawa
 letters were read from M^r Donaldson
 of Tapes, Rev W. J. Murphy Ottawa and
 from Prof Walden.

Librarian reported having received the
 astro-physical for the current month
 through M^r Hummer
 this is a valuable publication and
 a great addition to the library; the
 thanks of the society were tendered M^r
 Hummer for having placed the journal
 at the service of the society.

The question of commencing the meetings
 of the opera-poss section was referred to
 but no action was definitely taken.

M^r Karasberg handed round for inspection
 a specimen of the workmanship in
 aluminium which is now taking the
 place of the heavier metals in the construction
 of scientific instruments.

Several reports of observations were received;
 M^r Hummer had been quite successful in
 noting the immersion of Uranus at the
 occultation of April 12th. The time made
 was 11^h 51^m standard time.

M^r Donaldson of Tapes reported having
 observed the immersion also.

M^r Miller reported observations of the

solar surface and remarked that the prominences he had observed ~~had~~ recently were all in the northern hemisphere.

Mr. Elvins presented some drawings of the spots now upon the sun's surface.

An extract from the press was read relating to Swift's Comet as observed by Prof. Barnard.

The paper of the evening was an instructive essay on "Magnetism and the Dynamo" by Mr. Clarence Bell.

A series of drawings enabled Mr. Bell to explain very clearly the ~~construction~~ theory of the construction of the dynamo and ~~the~~ ~~different~~ to illustrate the different kinds in use.

As a chapter in practical science the paper was thoroughly appreciated and an interesting discussion followed.

An extract was read by the chairman bearing upon the magnetic needle and its variations and Mr. Bidart explained some of the difficulties in the way of surveyors by reason of the variation of the compass. Mr. Ross read an extract referring to the experiments recently performed before the Royal Society by Mr. Leslie the Montepine electrician.

Some of these were remarkable, it having been demonstrated that when the ~~velocity of rotation~~ ^{velocity of rotation} is very much ~~increased~~ ^{intensified} ~~it~~ ^{it} ~~is~~ ^{is} ~~used~~ ^{used} ~~for~~ ^{for} ~~practical~~ ^{practical} purposes it becomes absolutely harmless.

The next meeting of the Society was
 arranged to be held at the Observatory
 L.A.K. May 3rd and ^{was} an interesting
 evening was brought to a close by adjourn-
 ment

Wm. L. Hildrey
 Rec. Secy.

Charles Carpmach.

The ninth regular meeting of the
Astronomical & Physical Society
for 1892 was held at the Observatory
May 3rd the president Mr. Chas.
Carpmael in the chair.

The minutes of the previous meeting
were read and upon correction
were confirmed.

Mr. Dr. Hartwell and
Capt. Hay were duly
elected active members of this
Society.

Rev W. J. Minkley of Ottawa was
elected corresponding member.
Nominations.

Mr. D. C. Ross, 21 St. Nicholas St.
by Mr. Huelmer and Mr. Leonard

Dr. Watson, Queen St. E. elected one
Mr. Elliott and Lindsay

Mr. Boswell, by Mr. Howell and Mr. Leonard

Dr. J. H. Kenzie, B.A. by Dr. Hooker and Mr. Lindsay

There were several matters of
business to be discussed and these
were referred to a meeting of the
Council to be held on May 6th.
A letter was read from

Mr. Carson of
Hendry River

The librarian reported having received the monthly issue of the Royal Society England, and of the Royal Astronomical Society.

Mr. Karsner reported having observed Swift's comet in the early morning in the North East. Also had observed the occultation of 125. Tauri on April 29th at 9^h 47^m.

Mr. Lindsay reported having observed the occultation of a star at 8^h 27^m on the same evening, there being no record of it in the ephemeris.

Mr. Dewar had observed an aurora on April 25th at 11 P.M. at a station about 115 miles ENE of Toronto and had noted magnetic disturbances at the same time.

Mr. Elvins had received Mr. Hallingworth's report of observations of aurora from Muskoka and referring to it found that no mention was made of the phenomenon on the 25th April, but there was a record for the following day.

The attention of observers was called by Mr. Karsner to the fact that the rings of Saturn are now almost invisible being seen edgewise; he also called attention to the eclipse of the moon May 11th, the end of the eclipse being visible at Toronto.

Mr. Carpmael then invited ~~the~~
 members to adjourn to ~~the~~ dome
 of the observatory and the large telescope
 being placed in adjustment ~~and~~ the
 rest of the evening was spent in
 observing the moon and Saturn.
 The night was not very favourable
 but a good view of Saturn was obtained
 with a power of 80, the ring being
 seen as a slender thread of light.

The mechanism of the instrument was
 described and explained by Mr. Carpmael
 and Mr. Menzies of the observatory
 staff.

The paper for the next meeting was
 announced to be read by Mr. W. H.
 Houston M.A. on "Astronomy and
 the Provincial University".
 The place of meeting was to be arranged
 at the council meeting.

Mr. L. H. H. H.
 Secy.

Isaac G. G.
 Vic Pres.

Apr 1892
 The tenth regular meeting of the
 Astronomical and Physical Society
 was held May 17 in Beacon Hall.

Mr John A. Paterson in the chair.

The minutes of the previous
 meeting were read and con-
 firmed

Mr De Ross 218 W. Wesley st

Dr Watson 2uen trucked out

Mr Caswell Bay st

Dr W. Kenzies Young Steward

were duly elected actual members

of this society.
 A letter was read from Mr De Ross
 who regretted his unavoidable

absence and expressed his hearty
 sympathy with the society in its
 work.

Mr David E. Hodder of Alta. Iowa
 was nominated as corresponding
 member by Mr Luitday and Mr Pursey.
 Letters were read from Mr E. W. Maunders
 Editor British Assoc Journal requesting
 the society to forward items of interest in
 connection with its work; from the
 Director of Kew Observatory acknowledging
 the receipt of the transactions for 1891;
 from Rev J. E. Esler of Washington
 Observatory giving the position of a newly
 discovered variable in R.A. $16^h 39^m 49^s$ and
 decl $55^{\circ} 18' 7''$ having a spectrum
 similar to that of Mira.

REPORT FROM COUNCIL.

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A special meeting of the Council of this Society was held on the evening of the 6th instant, to consider certain matters referred to it. The chair was occupied by Professor Carpmael.

The Chairman read a letter from Dr. Sandford Fleming, C.M.G., an Honorary Member, who, after alluding to the desirability of taking some action with respect to inducing "all astronomers to reckon the day from midnight in place of from noon," went on to say:--"The Astronomer Royal of Great Britain is a warm advocate of the change. It is resisted by quite a number and perhaps an outside Society like ours could move in the matter now more effectually than even the Astronomer Royal. Should your Society favour the suggestion, I would be glad to write to Mr. Christie and obtain his views. A day for the universal change should be fixed and the first day of the coming Century is sufficiently near and sufficiently remote to be in every way suitable. The same day might be looked forward to for other important changes in the matter of Time-reckoning. We cannot begin too soon to move the world in anything of this nature."

Professor Carpmael having pointed out the advantages to be derived from uniformity in this matter, said that some astronomers of great reputation were in favour of the change suggested by Dr. Fleming, but that others, like Professor Newcomb, saw difficulties in the way and were disposed to question whether the results would be of a character so entirely satisfactory as was by some anticipated. Professor Carpmael, however, thought that the difficulties would in time disappear.

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and that the change would come to be generally accepted. He referred to the confusion that exists in the records kept by the merchant marine, and, as an illustration, described the difficulties met with by himself and others some years ago, in investigating a certain storm. Through the assistance of the late General Lefroy, the logs of many vessels were obtained. On comparison, it was found that on different vessels, different systems prevailed. For instance, many of the captains write up their logs for the twenty-four hours at noon. Some of these enter the events occurring between, say, noon of the 20th and noon of the 21st under date of the 20th, i.e., the astronomical and nautical day during which they occurred, and some under date of the 21st, or date when the entry was made, so that in the absence of specific information, it was impossible to tell to which set of twenty-four hours any given event should be referred. Owing to this lack of uniformity, the verification of facts sometimes depended upon outside and independent sources, which should not be the case. On the part of astronomers generally, the chief objection to the suggested change was due to a disinclination to be compelled to divide the observing-night into two halves, ^{the earlier half, belonging to one day, the later one to the next day,} although some objected to the increased difficulty a change might cause to the astronomer of the future in tracing out past events. But changes more radical in character, and more ardently resisted, had triumphed in course of time. The Chairman described at some length the various alterations which had been made in Time-reckoning, and their effects, and related some amusing instances where confusion and even serious difficulty of a legal nature had arisen from a want of uniform and accurate time-keeping.

After some further discussion, Mr. Elvins, seconded by Mr. Ridout, moved That the Corresponding Secretary be requested to write to Dr. Fleming stating that the Council had considered and had approved of the change suggested in his letter,

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and desiring him to transmit to the Society for reading and publication, such a Paper on the subject as shall, in Dr. Fleming's opinion, meet the requirements of the case. Carried.

The subject of Mr. Houston's Paper appointed to be read at the next meeting of the Society, having been mentioned in connection with the desirability of inviting the Minister of Education to be present, the Corresponding Secretary was instructed to enquire whether it would be convenient for the Honourable Dr. Ross to attend.

The propriety of securing a permanent place of meeting for the Society was discussed, and Messrs. Miller, Ridout and Lumsden were named as a Committee to make enquiries concerning a suitable hall.

Mr. Howell made a verbal report with respect to the finances of the Society and promised a fuller statement at its next meeting.

All of which is respectfully submitted,

W. Houston

Recording Secretary.

Toronto,

13th May, 1892.

Dr Donaldson of Texas wrote to request the members engaged in telescopic work to observe the companion to Alpha Centauri, there being one which he was inclined to believe was a long period variable or a star increasing in brightness.

Rev W J Murphy of Ottawa forwarded a copy of the "new law of planetary motion" as enunciated by M^r D McDonald of Montreal.

M^r David E Hodder of Iowa forwarded a number of the Weather Review containing his observations of the sun. The Librarian reported having received current numbers of Astronomy & Astro Physics.

Rut Allen Journal

The committee appointed for the purpose of procuring a permanent place of meeting was called upon to report.

M^r Miles stated that he had advertised for a room and had received one answer. But to the place offered to there were so many objections that the committee was requested to continue its investigations w^h Jethunter being added to it.

Several reports of observations were received.

M^r Elvin M Miles and M^r Howard had observed the companion to Castor mentioned by M^r Donaldson in his

letter and arranged to communicate with him in reference to it.

Dr Watson ~~was~~ referring to the appearance of Saturn in the telescope was of the opinion, concurred in by several others, that the ring would not disappear altogether even in small telescopes this month.

Mr Miller and Mr Evans reported solar observations, a series of drawings of spots being presented by Mr Evans. Dr Meredith introduced a question which has been discussed by some meteorologists, as to whether there is a general lowering of the temperature between 10 & 15 of May in account of the earth's position in its orbit ~~with~~ relative to ~~certain~~ the passage of certain streams of meteors.

Mr Evans said he would look over ~~certain~~ some records to which he had access and state the result at the next meeting.

The chairman then introduced Mr ~~Wm~~ Houston M.A. an active member of the society and a member of the University Senate.

Mr Houston ~~then~~ gave a most instructive address on the subject of Astronomy in the Provincial University.

After some introductory remarks upon the importance of Astronomy as a study and (Royal Enquiries later)

its refining influence as a recreation, the place assigned to it in the curriculum of the University was explained.

It was shown that the theoretical part of the science was the subject of lectures ~~from~~ by professors thoroughly well acquainted with the study but that through no fault of theirs, the students had no opportunity to learn anything of practical astronomy.

Several questions from examination papers were put to show how very far advanced students were expected to be in the use of instruments; though they could only learn their use by reading descriptions of them.

but this was very much to be regretted and Mr Houston stated that this was a prospect of a change and that the question of providing an observatory of instruction was being agitated.

At the conclusion of Mr Houston's address Mr J. M. Clarke with some very appropriate remarks moved a vote of thanks to Mr Houston for his admirable lecture.

Mr S. E. Levenson seconded the motion and referring to the actual furnishing of the funds necessary to construct an observatory, mentioned several cases where private munificence had been ^{to} a rescue. He hoped that some emulous would distinguish himself in some such manner.

Mr. Arthur Hawley while heartily supporting the motion before the meeting did not agree with all that had been said.

He thought that only a moderate sum should be appropriated to the purpose of constructing an observatory as the position of Linnæus was ~~such~~, and the general state of the weather were such as to render the use of the very best instruments almost impracticable. He pointed out that the locality of the observatory was not more to be with discovery than his instruments.

He ~~also~~ criticized also some of the University methods as to the management. Prof. R. Keyes did not agree with Mr. Hawley in his remarks upon the University management, and showed that the public could at any time avail themselves of the volumes of the library and museum.

The chairman thought that an interesting discussion on these matters might be prolonged to any length, but wished to remind the meeting that time was passing and put the motion as word. This was carried with applause and the thanks of the Society were tendered Mr. Houston coupled with the hope being expressed that he might be entirely successful in his efforts.

A most interesting evening was brought to a close and the next meeting arranged for May 31st in the same hall.

~~At his day~~
~~see day~~

Enrollment

The minutes of the council meeting held May 6th, were read and the resolutions adopted by the council were carried by the unanimous consent of the meeting.

At his day
see day.

Lamar W. Smith
Chairman

The eleventh regular meeting of the Astronomical & Physical Society for 1892 was held May 31st in Beacon Hall. The vice president Dr. Larratt Smith occupied the chair. The minutes of the previous meeting were read and confirmed.

~~Dr. Larratt Smith~~ Mr. A. Elving, in reference to Dr. Meredith's introduction of the question of temperature on the earth generally, stated that he had examined some records to which he had access and did not find that the ~~same~~ period of time named, that is from 10 to 13th of May was in any particular manner noticeable for a fall in temperature. In the short discussion which followed it was however brought out that there are single days in the year which are invariably marked by a fall and that certain meteoric phenomena are at least coincident.

Mr. Arthur Hawley gave notice that at the next regular meeting he would move that a committee of three or more be appointed "to take up the question introduced by Mr. Houston on the subject of Astronomy in the Provincial University."

Mr. David C. Hodder of Delta Iowa was duly elected a corresponding member of this Society.

Hon. Judge Clayton of Clarendon, Maryland was proposed for corresponding membership by Mr. Arthur Hawley and Mr. Henry

Miss Wilkes of 84 Gloucester st was proposed for active membership by Mr Elvins and Mr Dewar

Miss A.A. Gray was proposed for active membership by Mr Elvins and Mr Dewar.

The secretary read a letter from Prof. Pickering in reference to the possible variability of the nearest companion to Cochr. From comparison photographs it appeared that in ^{March} 1890 and ^{March} 1892 the star was of the same brightness. Dr. Donohoe however was still of the opinion that the star is a variable.

A set of ^{valuable} photographic plates were received from Prof. Holden of his observatory and the ^{hearty} thanks of the society were voted to the donor.

Mr. Henderson then stated that he had a letter & note which he was sure would be exceedingly gratifying to the members of the society, and there upon read a communication from Lady Wilson of Spoden's Crescent, in which the society was asked to accept the six inch reflector and the celestial globe which had belonged to the late Sir Adam Wilson; Lady Wilson wrote that it was Sir Adam Wilson's express wish that these instruments should be offered to the society.

It was moved by Mr H Elvins,
 seconded by Mr Arthur Harvey, ^{and resolved}
 that this society gratefully accepts
 the donation made to the society
 by Lady Wilson, of the astronomical
 telescope and the Celestial globe of
 the late Sir Adam Wilson, a donation
 valuable not only as a prized
 memento of an esteemed friend
 and active member, but intrinsically,
 and as a nucleus around which
 the society trusts the accessories
 of a popular observatory will be gathered
 in due time.

It was moved by Mr A. F. Miller
 seconded by J. E. Merdith and
 resolved that as a slight mark of
 the society's appreciation of Lady Wilson's
 gift Lady Wilson be requested to
 permit her name to be submitted
 for nomination as a life member of
 the society, and that the telescope
 and Celestial globe when received be
 known and inscribed as the Sir Adam
 Wilson Memorial.

In support of these resolutions which were
 carried with applause, appropriate remarks
 were made by the mover and the
 chairman and Mr. Lumsden, who pointed
 out that the society now had at their disposal an
 excellent reflecting telescope and also an
 excellent refractor; the one which Dr
 Laird Smith had placed at the service
 of the society. He considered that the

outlook was bright and hoped that 206
much of the expectations of the Society would be realized.

Mr. Hunsden reminded the ^{members} Society that
it was necessary to provide a temporary
place for the instruments and Mr. Harvey
offered to take charge of them at his resi-
dence till the question of regular place
of meeting should be settled.

In regard to this matter the chairman
stated that he would at an early date
interview Mr. J. H. Mason about the terms
under which a room might be had in
the new St. George Hall. The committee
was therefore further enlarged.

The librarian reported having received the
Report of the R. Astron. Society of 1892

Solar distribution by Mr. Shames.

Observations were then called for and several
interesting accounts received.

Mr. Arthur read a short paper on the peculiar
appearance of the moon in the evening of May 21,
the dark edge being illuminated in an unusual
manner. Miss Gray and Miss Taylor
confirmed the observation, having noticed
it without optical aid. Mr. Harvey's observation
was made at the telescope, commenting upon
the cause Mr. Harvey attributed it to the
twice reflected light from both Venus
and the ^{Earth} Venus being ^{very near the moon} ~~near the moon~~
and the ~~moon~~ ^{Earth} ~~moon~~ Mr. Elliot remarked
that he had observed the phenomenon under
circumstances quite different and ^{and} ~~without~~
^{other members} ~~and~~ ~~on~~ ~~the~~ ~~same~~ ~~day~~ doubted the possibility of Venus
being brilliant enough to cause the
phenomenon.



Mr Miller reported an interesting observation of Venus in the day time and also described the interesting group of spots upon the solar surface which corresponded with the group seen in April.

Mr Hawley remarked that one spot had been very near the sun's equator, nearer than he had ever seen it or thought it possible to be seen.

Mr Ridout referring to the positions of sun spots doubted the accuracy of positions given in longitude. Mr Miller explained how this was avoided at a table showing when the sun's central meridian is in the centre of the sun's disc in conjunction with the Observatory. The table is based upon the sun's rotation period.

A photograph of the electric spark taken at a static electrical machine was received from Mosher F. R. Miller. This proved of great interest and the hope was expressed that the work would be continued.

Mr Hummer reported an observation of Winnecke's periodic comet now passing south west between Ursa Major and her minor.

Mr Hurd day mentioned having spent an evening at the telescope with Mr Donaldson during the latter's recent visit to the city.

The paper of the evening was read by
 Mr. S. E. Hildner on Planetary motions.
 Diagrams were introduced to explain the
 apparent retrograde motion of a planet in
 the sky and the loops or closed curves which
 is described among the stars.

Observations extending over a long period
 were described at length and the entire
 phenomena compared most vividly with the
 slow motion of an object seen from another
 object carrying the observer very rapidly.
 Much of the paper was omitted owing to
 the lateness of the hour and the meeting
 adjourned to June 14th to meet at the
 Canadian Institute.

Thos Hildner
 Secy.

Lorratt W. Smith
 T.P.

The twelfth regular meeting of the Astronomical & Physical Society was held June 14th in the lecture room of the Canadian Institute.

Dr Lanark & Smith occupied the chair. The minutes of the previous meeting were read and confirmed.

Dr Smith referring to the discussions at previous meetings on the question of fall of temperature between May 10 & 13th, stated that he had not found the theory borne out by observation and presented a statement prepared from his own records of the temperature from May 7 to 16 in each year between 1877 & 1892.

A letter was read ^{by Mr. Lindsay} from the secretary of the Canadian Institute offering to allow the Society to meet in the lecture room of the Institute till November of this year at 1⁵⁰ per meeting.

Dr Smith stated that he had spoken to Mr J. H. Mason about the Society's requirements and had been offered a room in the new St George Hotel at 50⁰⁰ per year. These offers were considered quite reasonable but no action was taken.

Mr Elvins seconded by Mr Lindsay moved that the committee appointed be asked to continue their investigations. That was carried. It was pointed out that the sum required for rental, though not large would still be quite a drain upon the income of the Society.

	May 7	8	9	10	11	12	13	14	15	16	
1877	50	50	49	49	49	54	60	64	62	59	8 a.m. } Canada
	47	48	49	46	50	54	53	57	59	65	10 P.M. }
1878	42	52	60	50	56	56	Had frost in Canada	-	-	65	8 a.m. } on Atlantic
	-	-	50	-	-	-	-	-	-	in England	10 P.M. } 7 to 15 miles
1879	43	47	46	48	58	62	64	58	62	52	8 a.m. } Canada
	41	46	45	54	60	64	65	66	52	52	10 P.M. }
1880	42	48	62	60	55	56	43	44	48	62	8 a.m. } Canada
	43	55	65	54	52	50	43	43	54	66	10 P.M. }
1881	54	66	60	65	68	78	66	59	59	54	8 a.m. } Canada
	55	55	67	67	74	70	63	54	55	54	10 P.M. }
1882	46	53	57	50	42	40	44	50	43	49	8 a.m. } Canada
	45	45	56	46	40	42	50	50	42	52	10 P.M. }
1883	46	51	50	48	42	46	42	44	47	40	8 a.m. } Canada
	56	52	46	56	42	38	42	42	50	41	10 P.M. }
1884	44	41	44	47	49	49	46	46	Artificial	Artificial	8 a.m. } Canada
	42	45	48	48	48	47	44	44	Artificial	Artificial	10 P.M. }
1885	48	41	36	38	40	45	48	54	65	63	8 a.m. } Canada
	42	41	37	36	36	42	50	54	54	53	10 P.M. }
1886	46	48	54	47	47	46	55	52	56	45	8 a.m. } Canada
	42	45	54	43	46	50	54	57	45	39	10 P.M. }
Low temperature 1887	68+62	54.68	54.68	56.68	62.70	rain	57	54	58	58	8 a.m. } New York & Canada
High - inside	54+68	52+68	58.68	62.70	rain	66	48	50	50	62	10 P.M. }
1888	42	46	48	54	58	60	44	40	34	38	8 a.m. } Canada
	42	45	52	52	60	50	42	40	40	40	10 P.M. }
1889	62	64	64	67	62	-	56	60	49	54	8 a.m. } Canada
	58	70	73	67	on train	-	-	50	46	52	10 P.M. }
1890	36	38	48	41	45	43	46	50	49	42	8 a.m. } Canada
	40	43	43	40	42	46	54	47	46	44	10 P.M. }
1891	60	64	66	70	76	on train	57	50	56	40	8 a.m. } New York & Canada
	-	-	76	-	-	49	48	46	57	40	10 P.M. }
1892	44	46	52	50	51	50	54	60	55	58	8 a.m. } Canada
	42	46	58	50	56	54	54	52	52	60	10 P.M. }

The above shows the temperature for the last 16 years from 7 to 16 May inclusive - one in each year. Taken at 8 a.m. & 10 P.M.

Temperature taken at 8 a.m.
4.10. P.M. from 7 to 10 May
Latitude from 1877 to 1892
Longitude

Miss Welles 84 Gloucester or Forest
 Miss A. H. Gray 19 Avenue St. do
 were elected actual members of this
 Society.

Hon. Judge Clayton of Clarence, Md.,
 was elected corresponding member.

Mr Pusey addressed the meeting ^{on} the
 subject of the best method of making use
 of the telescope presented by Lady Wilson
 to the Society. He pointed out the necessity
 of having the instrument ^{mounted} ~~placed~~ in some
 place quite central and commodious also.
 He stated that Mr C. P. Spauling had offered
 to take charge of the instrument at his re-
 sidence 28 1/2 Victoria St., and to arrange that
 access to it could be had by the members
 at all reasonable times.

It was thereupon moved by Mr Elliot seconded
 by Mr Pusey that Mr Spauling's offer be
 accepted. This was carried; it being further
 pointed out that Mr Spauling's residence
 being so convenient to the Normal school
 grounds, it would be an easy matter to take
 the instrument over there occasionally in
 the event of the Society receiving permission
 to hold open meetings there for the purpose
 of observation.

Mr Dewar then drew attention to a clause in
 the constitution of the Society that the Librarian
 was responsible for and should take charge of the
 apparatus belonging to the Society.

Mr G. M. Miller was nominated for actual membership by Mr Spauling and Mr Pusey.

Mr. Ewin then moved that Dr. Harriot
Smith's reflecting telescope be placed
in Mr. Pursey's residence for the use
of the west end members. That he
showed would aid the society very much
as there would then be an instrument ^{at}
the service of the members in the west
end, and one for those living East.
This was seconded by Mr. Pursey and carried.
Letters were read by Mr. Lumsden.

From Dr. Sandford Fleming, who stated
that he was in communication with the
Astron. Royal of England on the subject of
the change in time reckoning;

From Mr. J. E. Gore who had sent to the
society the manuscript of a chapter on
"Stellar motions" & appear in a volume
& be shortly published by him.

A letter from Mr. D. E. Hodder of Iowa was read.
The Librarian reported having received
Reports of the Astron. Society of the Pacific,
Report of the British Astr. Assn.

Mr. Howell presented laid on the table
the negatives which he had been used from Lick
Observatory. He showed a print of one and would ^{others} make.
He stated that copies of these he would
arrange to supply to members at a
price of 25¢ and that the margin
between the actual cost and this sum
would be applied to the credit of the
Lantern slide fund.

The meeting appreciated Mr. Howell's kind
efforts in this matter.

Mr Arthur Hawney had given notice at a previous meeting that he would move that a committee be appointed to take up the question introduced by Mr W Henson. Action was deferred in this matter until the next meeting.

Mr Lumsden gave notice that he would move that a series of questions on the subject of change in time reckoning be prepared and sent to directors of observatories and other interested, through America. Mr Hawney stated that Mr J. S. Ridout was shortly to leave for Europe and that he purposed visiting Rome, and the observatory of the Vatican.

Mr Hawney therefore moved, seconded by Mr Pusey that the secretary be requested to furnish Mr Ridout with credentials from this society, introducing him to the director of the Vatican observatory and to scientific societies wherever he might be visiting.

This was carried.

~~Some~~ Reports of observations were received, from Mr Elvins, Mr Hawney and Mr Miller.

Mr A. F. Miller described at length ~~the~~ ~~and~~ aided by drawings made on the black-board certain solar phenomena observed by him on the morning of June 12 between 7.45 and 8.30

Mr Elvins had made some sketches of the sun spot groups ~~now~~ ~~seen~~ ^{now} seen in the solar disc, and had noticed with Mr Hawney

The thirteenth regular meeting of the Astronomical & Physical Society, ^{21st 1872} was held June 28 at the residence of M^r C. P. Spauling 282 Victoria St.

M^r Jas. A. Paterson occupied the chair. The minutes of the previous meeting were read and confirmed.

M^r Arthur Harvey wish to defer the putting of his motion until a future meeting.

M^r Lumsden seconded by M^r Foxhunter moved that the President, M^r Elvins, M^r Miller and the mover be a committee to frame a series of questions to be submitted to astronomers respecting a change in the time notation of the astronomical day.

This was carried.

M^r G. M. Miller was duly elected an actual member of this society.

It was moved by M^r Foxhunter, seconded by M^r Elvins that and resolved:

That Lady Wilson of Spodina Crescent Toronto, be and is hereby elected ^{as a life} ~~an~~ actual member of this society and that all rules requiring notice of nomination, payment of fees &c be and are hereby suspended.

This was carried.

It was then moved by M^r Pursey seconded by M^r Harvey and resolved,

That as some recognition of the graceful act of presenting to the Astronomical and Physical Society the telescope and celestial globe of the late Sir Adam Wilson,

Lady Wilson be and is hereby elected a life member of this society and that all rules requiring payment of fees be and are hereby suspended. This was carried.

Rev Father McBride was nominated for active membership by M^r Lindsay and M^r Miller.

M^r S. M. Miller was elected an active member. Letters were received from the Director of Melbourne University and Southamp Observatory.

M^r Lumsden read a letter from Miss Agnes M. Clarke of London Eng. who transmitted a paper on the "Nova Aurigae".

A letter from Rev W J Murphy of Ottawa was read. He wrote that arrangements would be made for observation of the occultation of Mars at the Observatory.

read at Ottawa.

^{the} Librarian reported the receipts of British astron assn journal and Astronomy & Astro-Physics.

In reply to a question asked by M^r Pusey, M^r D. J. Howell said that certain lantern slides which he had ordered had not yet arrived. He would report further at our next meeting.

Reports of observations were received from several members.

M^r Harvey ~~has~~ presented a sketch of Mars showing markings on the disc, as observed in a 3 inch refractor. Also reported having observed a well defined Perseida on June 25th, an unusual phenomenon in this climate at this season.

M^r Lumsden described an observation made in a simple manner to determine the obliquity of the ecliptic and presented a sketch showing the angle between the line of shadow at midday on Dec 21 and on June 21st.

Sketches of solar prominences were received from M^r Miller.

The paper for the evening was a chapter on "Stellar Motions" contributed by M^r J. E. Gore F.R.A.S.

As it had been arranged to spend a part of the evening in observing, this paper was taken as read and the meeting adjourned to the lawn of the Normal School, where the Society's refracting telescope ^{several also were} was placed in position, also a smaller one.

The object glasses of these instruments are respectively $2\frac{3}{4}$ in and $2\frac{1}{4}$ inch apertures by Vion Fures of Paris.

M^r Lumsden provided also a 2 in. telescope and an opera glass.

Very satisfactory observations were made of the moon Saturn, and some double stars.

An hour was spent in this manner and the meeting then adjourned. The society's refracting telescope was taken care of by Mr Pusey in accordance with the resolution passed at the previous meeting. It was arranged to hold the next meeting July 12th in S Porter's office.

Ths Friday

Ree See

Erratum

Mr Miller read a letter from Prof. Hale of Kenwood observatory, to whom Mr Miller had written in reference to the observations described at length at the previous meeting.

Prof Hale had not observed the solar prominences on the day in question and Mr Miller called attention to the fact that it is not only in well equipped observatories that important observations are made, and that amateur observers may at times observe phenomena well worthy of recording.

Ths Friday

Ree See

L. Corbett to Smith

V. P.

Read among
the correspondence

The fourteenth regular meeting of the Astronomical and Physical Society for 1892 was held at the Office of Dr Foster Yonge St market. July 2th

Dr. Barnab W. Smith occupied the chair

The minutes of the previous meeting were read and confirmed.

Mr A. Harvey speaking in relation to his ~~motion~~ ^{which was deferred to this meeting} for a committee to take up the question introduced by Mr Haunston which was deferred to this meeting asked that it be laid over till some future occasion

Rev Father McPond and

Mr. Pitt

were elected active members of the society

Mrs Margaret Fry Baldwin

proposed by Barnab W Smith

seconded by Arthur Kearney Esq

Mr Jas Foster. Optician

proposed by A. Elvins Esq

seconded by G. E. Lumsden Esq

Mr C. I. Gilbert. of Marlboro. and

proposed by Mrs A Elvins

seconded by G. E. Pursey

Mr W. L. Gilbert 470 Wellesley St

proposed by A Elvins

seconded by G. E. Pursey

were proposed for actual membership

A. Communications were received from Mr Prof

B. of Kingston who thought that the the elevating science of Astronomy was practically denied to us as a people being totally ignored by the Department of Education and that even in our

Universities it is relegated to a comparatively unimportant position. He expressed the hope that the Minister of Education would add Astronomy to the subjects to be taught in the schools and that the formation of classes for outdoor work should be encouraged.

Prof Elvins and Hainey spoke on the subject this introduced and expressed the opinion that the elements of the science should be taught in the High Schools and Colleges at least. It was stated that in the United States in most of the High Schools and all the colleges and Universities instruction was given and that in the equipments in some of the Universities are among the best in the world while in some of the high schools there are telescopes of an apparatus of very great excellence.

but only to pupils deemed to study the

A communication from Mr Adam Johnson re our publication was read and had been replied to by the Secretary.

Also one from Lt Col Mc Gill of the Royal Military College in reply to a query of the Secretary re Examination papers in astronomy.

The Librarian Reported the receipt of the following. On the Orbit of of the Binary Star Leonis. by J. C. Gore R. A. & a paper read before the Royal Irish Academy June 22/91. Report of the Superintendent of the U.S. Observatory for year ending June 30/91. Mittheilungen der Vereinigung von J. Haag 9 Proceedings of Royal Society May - June 1912

Your Committee appointed to
consider the proposed change
in reckoning the Astronomical
Day, has to make its first
Report.

Your Committee met at
Mr. Lewis's house on Friday the 8th
inst., Mr. Lewis presiding. The
undersigned submitted a draft
circular-letter which, after some
amendment, was directed to be
amended in some particulars
and shown to Professor Copland.

Your Committee recom-
mends that Dr. Louis J. Fleming,
Esq., be added to the Committee
and that he be appointed chairman
thereof -

Respectfully submitted

G. E. Burrows

acting Secretary.

12 July 1892.

also that a piece of a meteorite presented to the society some time ago had been delivered to them.

Mr Lumsden reported on behalf of the committee ^{change of ~~the~~ ~~committee~~ ~~the~~ ~~astronomical~~ ~~committee~~} that they had met and considered a draft of a letter which was directed to ~~be~~ amended in some particulars and submitted to Mr Capron. The committee also recommended that Dr Sanford Fleming C.M.P. be added to the committee and that he be appointed Chairman thereof.

On motion of Mr Patterson seconded by ^{Mr} Miller the report was received and adopted. Mr Pursey reported that he had had Mr Turnbull remove the ^{of Dr Adam Wilson} telescope from the residence of Lady Wilson to Mr Sharkey's residence.

Mr Sharkey reported that the telescope had been received and on examination found that it needed some adjusting. ^{It was moved} ~~By~~ ~~motion~~ by Mr Sharkey seconded by Mr Miller that Mr Turnbull ~~was~~ be instructed to have the telescope adjusted and put in proper order. ^{Carried}

~~Observation~~ Mr Lumsden stated that Uranus would be close to the moon on the 30th inst at 10.30 P.M.

Mr Elvins Miller Donaldson Harvey gave ~~some~~ observations of Solar Shots and other solar phenomena.

Mr Miller Elvins presented a series of fine drawings of the solar disc showing the positions from day to day of the

~~Mr Miller gave a report of the~~
of the various groups of spots.

Mr Miller gave the meteorological
measures of the principal group as 147.00 miles

On July 7th he had seen at 8.30 am. the
large spot of that date as a notch on the sun-
south eastern limb. Its approach was
heralded ~~by~~ on the morning of July 6th by
the appearance of a group of intensely brilliant
prominences at position angle 170°

This spot as well as the great Northern
group was visible to the unassisted
eye July 9th and 10th

Mr Miller reported that through
the kindness of Dr Carrall Smith
a group of observers with portable telescope
and opera glasses made the observations
of the occultation of Mars
from his grounds. Great care was
exercised in taking the times of contact
which he gave as follows July 11th

Immersion, first contact, July 11th
11 h. 19 min. 37 sec.; second contact 11 h. 19 min. ⁴⁵ 27²

Emersion first contact July 12th Oh. 14^h
15 min. 1 sec Eastern
standard time

Dr Smith Mr Elvin Mr Miller
Dr A. D. Watson. Mr Hawley others
enlarged upon the report and mentioned
many interesting features

Dr Watson who used a very high
power on his telescope, said that when
Mars was about 40 seconds of arc distant
from the bright limb of the moon he noticed

a gradual dimming of Martian detail, the south polar cap and planetary markings seemed to subject to a "shimmering" such as is seen when an object is observed through a heated atmosphere.

Mr. Cunsden reported that during an observation made between 2 + 4.30 am on the 8th inst. a large dark marking near the south pole, by its motion, afforded evidence of the rotation of the planet. The south polar cap was so conspicuous as to appear like a brilliant semi-circular object superposed on the planet rather than as one forming part of it.

Predictions. Mercury will cross the constellations of Gemini, Cancer, and Leo during the month; on the nights of 14th may be seen a little below Regulus. Venus may be looked for in the day time her position being on the 16th in Gemini R.A. 16 h. 6 m. 58 sec and 17° North Dec. Uranus will be a little north of the moon at about 10.30 P.M. on the 30th.

Mr. Miller then read Miss A.M. Clarke's paper on "nova aurigae" and after a brief discussion Mr. Elwin moved seconded by Mr. Paterson that the corresponding secretary be instructed to write to Miss A.M. Clarke conveying the thanks of the society for her most able paper and and informing her of the appreciation of the her most able paper. carried

It was moved by Mr. Harvey seconded by Mr. Paterson that the

paper be published forthwith and distributed to our various exchanges carried.

Dr Smith called attention to a paper in the Nineteenth Century by Norman Lockyer which related to the same subject. It was suggested that it be read at the next meeting.

The next meeting was announced to be held July 26th at 280 Carlton St. the Residence of Mr A. B. Miller

The meeting then adjourned..

Continued

D. J. Howell acting
Recording Secretary

John A. Gatenon
V. Pres^r

The fifteenth regular meeting of the Astronomical and Physical Society was held Tuesday July 26th 1922 at the residence of Mr A. S. Muller 280 Carlton St.

Mr A. Paterson Esq M.A. occupied the chair. The minutes were read and after some amendments were confirmed

Mrs Margaret Fry Baldwin,

Mr Jas. Foster Optician,

Mr C. L. Gilbert 17 Marlboro Ave,

and Mr W. B. Gilbert 470 Wellesley St

were elected active members of the society

Mr James W. Bee 129 Elm St Toronto was proposed for active membership by Mr Alvin seconded by Mr G. E. Lumsden

Communications were received from Rev^d W. J. Murphy of Ottawa re occultation of Mars ~~from~~ from Mr Donaldson and Mr Galdie and Thos Lumsden of Winnipeg

Mr Galdie, Mr J. C. Donaldson and Mr Lumsden ^{with their letters} gave accounts of their observation of the occultation of Mars. Rev W. J. Murphy of Ottawa with Mr Deville Surveyor General and Mr King C.P. made very careful observations and reported the following

Immersion, first contact 19h. 45m. 43.37s.
 second contact 18. 48m. 47.59s. Emission
 first contact 19. h. 41 m. 74. 72 sec.; second contact
 19h 42 m 29.18 sec sidereal time

Mr Elvins gave a full & very complete report of the auroral display of the 13th 14th & 15th with spectroscopic observation as well as a general description. A glowing description

was received from J.C. Donaldson of Elora Taurus
 Reports were also ~~received~~ ^{made} from by Rev R.C.
 Caswell the chairman Dr Bennett W
 Smith and Messrs A.H. Miller Arthur Harvey
 D.P. Howell R Dewar. Clarence Bell and others
 Mr J.C. Donaldson sent a very fair photograph
 of the sun made by Mr J.R. Connon Elora
 at 3 P.M. July 9th.

Mr Arthur Harvey described the
 great thunder storm of last Friday the report
 describing a fireball which exploded on a
 telephone wire

References were made to the great heat
 prevailing and the violent thunderstorms
 and curiosity was expressed as to
 whether the position of the planets could
 be the cause.

Attention was called to Mars being
 in more favorable opposition than will
 occur again for 15 years

To the position of Uranus on the 30th
 A slight occultation of Jupiter by the moon on
 the 13th of August The Occultation of 19 Scorpii
 by the moon on August 2nd at 8:45 also of the
 star γ , 8, 274 at 8:18 on the 10th Minima of
 α Argol at 12:40 A.M. Aug 3. and γ , 29 on the
 6th Delta Aquarii till the 30th The Perseids
 from the 7th to the 13th

An effort was made to have systematic
 observation of the Perseids on the evenings of
 the 10 + 11th but nothing definite was arranged

In reply to a question by the chairman
 Mr Turnbull stated that

the Sir Adam Wilson Telescope required
the rectangular rack motion and two eyepieces
in order to be in first class condition.

at Mr Barrie's suggestion Mr Lumbell
was asked to furnish an estimate of
the probable cost of these improvements.

It was decided to hold the next meeting
in the Queen's Park Bandstand Pavilion
and to have as many portable telescopes
as possible. The meeting then adjourned.

Lambert W Smith
V.P.

H. J. Howell acting
Rec Secy

Aug 9th/92

Note:— Owing to unfavorable weather
the meeting to have been held in the Queen's Park
was postponed to the next regular meeting
night at a place to be announced by the
secretary.

H. J. Howell acting
Recording Secretary

Lambert W Smith
V.P.

The sixteenth regular meeting of the Astronomical & Physical Society was held at the Observatory Tower Park Aug 23 1892.

Dr. Larratt & Smith occupied the chair.

~~Mr. J. W. Lee~~ The minutes of the previous meeting were read and confirmed.

Mr. J. W. Lee 126 Elm St Toronto was duly elected a member of this society.

The following gentlemen were nominated for active membership

Mr. J. P. Blouffer 177 Huron St
by Mr. A. Elvins
and Mr. Miller

J. R. Blouffer 49 Grenville St
by the same

Mr. Justice Oster 35 Avenue St
by Dr. Meredith
and Dr. Smith

Mr. W. F. King was nominated for corresponding membership
by Mr. Lindsay and
Dr. Meredith.

Mr. Lindsay moved seconded by Dr. Meredith that Mr. King be declared elected, the usual rule being suspended.

This was carried and Mr. King duly elected a corresponding member of this society.

In the absence of Mr Lumsden
the correspondence for the past month
was presented by Mr Ellis.

Interesting letters from Mr R Dewar
and Mr Hollingworth were read
having reference to the auroral display
of July 16th; Mr Dewar's description
was particularly graphic; Mr Holling-
worth called attention to the sounds
accompanying the display.

A letter from Dr Veder was also
read on the same subject. credit
was given by the talented writer to
Mr Hollingworth as being the
first to call attention to the
peculiar sounds, and he hoped
other observers would endeavour
to report about these.

a letter ^{was read} from Prof Halden of Lick
observatory disclaiming any
responsibility for articles in the
press unless they are signed by
some one of the astronomers engaged
in the observatory.

Photos of the sun's surface were
received from J R Cannon of Elord.
These were very excellent and
will form a valuable addition to
the Society's collection. The thanks
of the Society are due to Mr Cannon.

A letter from Mr W F King was
read, in which he referred to his
paper on "The computing of occultations"

read before the Royal Society of Canada, ~~and~~ a copy of which was forwarded to the Society's library.

Mr King's method is an application of diagram work with ruler and compass, to the rigorous analysis of the great Bessel. Mr King wrote that he would most heartily co-operate with any of the members in these observations.

Letters from Mr S E Peal of Maid and from Mr Hunter of Barrie were reserved for future reading.

The librarian reported the receipt of several valuable works; among these a volume of reports from Cincinnati observatory.

Mr Miller called particular attention to this latter and stated that Prof Porter was engaged in a most important work ~~and~~ that of observing stars for proper motion ~~in combination~~, and recommended that the members take advantage of having the volume in the library.

A letter from Mr Lindsay was read, objecting to the theory that the configurations of the planets have ~~anything~~ ^{something} to do with our weather. He called attention to the danger of trusting to coincidences in these matters.

Mr Pusey introduced the question of preparing a programme of meetings re. this was referred to council.

Some predictions of phenomena were read from the Society's printed list in the transactions.

Drawings of Jupiter and Mars were presented by Mr Collins, and handed round for inspection.

Mr Miller reported the general result of his observations of the solar surface since July 26th.

The most striking spot seen was the one which came on the Eastern limb July 30th. This was described minutely. Of the spectroscopic observations the most important was made on Aug 14th.

Mr Miller also presented a negative of the stars in the region of Alpha Aurigae. This was taken by a home-made camera and a four-inch telescope and was excellent evidence of the work possible with comparatively humble appliances.

The negative was handed round and much admired. Mr Miller said he had no doubt most excellent results might be obtained by using the observatory telescope. For this purpose, ~~and~~ ^{and} introducing a common camera.

The evening being not suitable
for observations a short paper
by J. E. Gore was read by Dr
Smith. The subject was
"The secret of the Heavens" and
proved a most interesting
description of the sidereal heavens
in regard to the probable distribution
of the stars.

The next meeting was arranged
to be held at the residence of
Mr Spaulding, 286 Victoria St
and the meeting adjourned.

W. Lindsay
Rec. Secy.

John A. Gatenby
V. Pres

Astronomy & Astro Physics was received
for a report

The seventeenth regular meeting of the Astronomical & Physical Society was held Sept 6th 1892 at the residence of Mr C. P. Spaulding 286 Victoria St. Mr J. A. Peterson in the chair. The minutes of the previous meeting were read and upon some corrections being made were confirmed.

The following gentlemen were elected active members of this society:

Mr J. P. Clougher 173 Huron St
 J. R. Clougher 49 Grenville St
 Mr Justice Oster 35 Avenue St

and the following named ladies and gentlemen were nominated for membership, active,

Miss Jessie Temple 36 Baldwin St
 by Miss Taylor & Miss Gray

Miss Alice A Gray 40 Major St

Mr W. A. Munro

22 Wellington St

by Mr Elvins & Mr Howell

for corresponding membership:

Mr R. J. McKeenan

Dundas St

by Mr Elvins & Mr Howell

Communications were read from

Miss Agnes Clark

London

Mr W. H. Denning

Bristol

Mr J. C. Donaldson

Perth

Rev J. E. Espin

Walsingham Observatory.

From the last named a circular, sent out officially from the Observatory was received. It read as follows:

" Mr H. Corder having informed me
 that the Nova Aurigae has increased, it
 was examined here August 21st and
 found to be of mag. 9.2 spectrum
 monochromatic: one intense line (500?)
 Commenting upon this Mr Miller stated
 that the "nova" had been reported as
 having decreased to practical invisibility;
 also that the spectrum as now seen
 would indicate that the star is now
 nebulous; a very remarkable change
 and one which it would be difficult
 to explain, in view of the former theories
 regarding the star which had been very
 clearly stated. It was hoped that
 further reports would be received from
 the principal observing stations.
 The Librarian reported having received
 a chart of the magnetic disturbances 1892
 from U.S. Naval Observatory.
 Also the Journal of the Brit. Ast. Socn.
 The Chairman read ^{from this} some extracts ⁱⁿ which
~~was~~ very kindly references to this
 Society were made.
 Mr Clark reported that he had sent
 to Dr Vreda a paper by Mr Hollingworth
 on disturbances of the aurora.
 Some discussion here arose as to the
 appearance of aurorae in different places
 at the same hour of local time and
 distinguished from absolute time; aurora
 or Vreda's ^{conclusion} is that the ^{maximal} aurora
 appear at the ^{same} ^{local} ^{hour} ^{of} ^{the} ^{day} ^{and} ^{at} ^{the} ^{same} ^{time}.
 a feature of the phenomenon.

Several observations of interest were reported. Mr John Goldie of Salt had noted the occultation of Mars Sept 4 and June 1st 19th 1st as the moment of total disappearance.

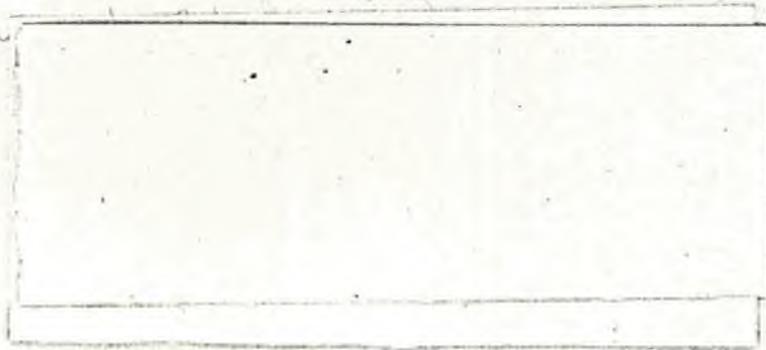
Mr Donaldson of Tupper June 1st 16th 50th He also reported the immersion of ϵ Librae at 8^h 15^m on 24th August in hindray at Grimby out, made the time of immersion 8^h 7^m 56^s.

Mr Miller stated that the sun spot group had not been of particular interest during the past two weeks.

Mr Dewar presented an analysis of the meteoric stone which is in the possession of the Society, the gift of Mr Gausson.

It resulted as follows:

Mr Dewar



Mr Dewar was satisfied that the analysis proved the meteoric origin of the stone but he pointed out to an enquiring member that the fact of there being sulphur in it did not of itself prove that the stone came from the regions below. (Read the Erratum) after a short discussion on matters of general interest the meeting adjourned to the lawn of the normal school where

M^r Dewar

Analysis of Meteoric Iron
In Museum of The Astronomical and Physical Society
of Toronto

Iron	83.7 %
Phosphide of Iron	10. ..
.. .. Nickel	traces..
Al	4. ..
P. phosph	2. ..
Mn.	traces..
Co.	traces..
(S)	traces..
	99.7 %

P. Dewar

3/8/92.

The Sir Adam Wilson telescope, and a small telescope brought by Mr Miller, were placed in position.

Several objects of interest were observed and admittance spent very profitably in this manner.

The next meeting was arranged for Sept 26 at the residence of Mr G. G. Pusey 189 Walnut St

Errata

A short paper on "Meteoric observations" contributed by Mr Denning was read by Mr Burdett.

Approved Sept 26 1892

James Todhunter
Chairman

H. E. Loomis
Acting Secy.

Mr Miller presented a photograph of the solar spectrum which showed some of the lines very clearly. This was taken with the same spectroscope as had been used to photograph the stars in April on a former occasion. In reply to a question Mr Miller explained his method of working and expressed his opinion that much might be done by amateurs in that direction."

The eighteenth regular meeting of the Astronomical and Physical Society of Toronto was held on Tuesday evening the 26th of September, at the residence of Mr. G. W. Pursey, No. 189 W. Canal St., Mr. James Goddard in the chair. In the absence of Mr. J. Lindsay, Mr. G. W. Pursey acted as Recording Secretary.

The minutes of the previous meeting were read and confirmed.

Mr. Goddard announced that arrangements had been effected by which the morning papers would announce in their local columns the times and places for holding the meetings of the Society. This being the case, no notices, as hitherto, would be sent out, at least until the new system had had a fair trial and ~~not~~ ^{not} been found to be a success.

Miss Jessie Temple, 36 Baldwin St., Miss Alice A. Gray, 40 Major St. and Mr. W. A. Munro, 22 Wellington St., were duly elected active members, and Mr. R. J. McCallan, of Dundas, was elected a corresponding member.

The letters read included one from the Editor of the Montreal Star seeking information about the Society and one from Mr. McCallan, of Dundas, speaking favourably of the Table of Predictions appended to the last issue of the Society's transactions.

The Librarian reported the receipt from
 Mr. J. Ellard, Secy. & Rev., of a copy of
 author's work entitled "Southern Atlas of
 Stars."

Mr. Munro Sumner, of Toronto, pre-
 sented a circular explanatory of the
 new Celestial Globe recently doubled
 by Lady Wilson, and was thanked for it.
 The circular was ordered to be bound. Mr.
 Sumner announced that he was pro-
 posing an exhibit of globes for the World
 Fair and hoped to secure the first prize.

Mr. Sumner was instructed
 to write to Mr. Toppi, the Editor of Webb,
 and to suggest that the new edition should
 contain a list setting forth the various
 different names applied to various
 workings by various astronomers.

It was reported that Dr. Bradford
 Fleming, having returned from Europe,
 had been notified of his appointment
 to be Chairman of the Committee on
 Time Notation and that he had been
 requested to prepare a list of questions
 drawn up so as to elicit the views of
 astronomers on the subject, returning
 the astronomical day from midnight
 to bed of four noon.

Mr. Miller made a verbal report
 upon the excellence of the Sir Adam
 Wilson Telescope and of the telescope
 loaned to the Society by Dr. Harrold
 Smith. Mr. Evans was authorized

to insure the latter instrument so that it might, with the consent of the Assurance Company, be moved as occasion requires.
Under the head of Observations, etc.

Mr. A. F. Miller referred with some detail to the groups of sunspots observed during the past few weeks. Though there was no evidence of special solar activity, some of the spots possessed interesting features. A group well worth attention appeared on the 17th inst., and will be visible for 12 days from that date. Mr. A. Elvins and others described very richly tinted after-gloves which appeared after sunset on the 17th and the 18th inst.; an aurora was observed on the 17th. Many references were made to Mars, now becoming gibbous in form, some observers thinking that definition is better than it was some weeks ago when the brilliancy of the planet was very great in tele-

scopes of small aperture. The reported discovery of a fifth satellite to Jupiter occasioned an animated discussion. It was regretted that the discovery attributed, with such apparent sincerity, to Prof. Barnard, of Lick observatory, had not been confirmed, and it was suggested that until there was confirmation the report should be received with caution. No member of the society had been able to see a fifth moon, and, so far as it was known, all the observatories were silent on the subject. Attention was called to the fact that in a paper read before the society on the 10th of March, 1891, Mr. Elvins, in the course of a discussion of Jovian phenomena, stated that

he suspected "that the matter composing the great red spot is above the atmosphere of Jupiter, and detached from it. If so, it would come under the operation of Kepler's laws, and would revolve slower than the planet rotates. He suggested the possibility of this being the first state of the existence of a satellite as yet but slightly condensed—a new satellite, in fact, in which case it would pass outside the planet's disc; but evidence of this he had not been able to perceive. Naturally, Mr. Elvins is much interested in the reputed discovery, but, like others, he awaits the confirmation of the report before accepting it as authentic.

A letter was read from Mr. John A. Copleland,
of the Globe Office

stating that the late Mr. Jackson, of Eglinton, "maintained that Jupiter Had Five Moons."

The writer went on to say that he himself had seen six moons, and he sent in nine diagrams, made on as many evenings in August. It was, however, clear that the writer had included among his moons two stars in the constellation in which Jupiter is placed.

Mr. Pursey read from the Globe a letter in which Mr. W. J. Smith ^{of Toronto} contended that Mercury has one or more moons and suggested a plan of observation for their detection.

Mr. Lumsden read a paper in which reference was made to the observations with respect to Mars so far reported during the present opposition of that planet. Though during the first week in August Mars was nearer to the earth than he has been for 15 years, his position above the southern horizon was so low that much of the advantage due to proximity was lost

to northern observers. From southern observers, over whose heads Mars more nearly passes, the most interesting reports would probably be received. So far the deepest interest has attached to the reports telegraphed from Arequipa, Peru, the site of the Harvard Observatory annex, under the direction of Prof. W. H. Pickering. Doubt-

less from the Lick and other great observatories detailed statements of observations would be published in due time. Prof. Pickering's discoveries were discussed, and instructive extracts respecting the Martian seasons and the gradual changes in color and tints due thereto, were read from two papers recently published by him in Astronomy and Astro-Physics.

The Society then adjourned to meet on the 7th of October at 85 Wellesley St East, the residence of Mr. James Todhunter.

W. H. Lumsden
Recording Secretary (acting)

John A. Copleland
Vice-President

The nineteenth regular meeting of the Astronomical and Physical Society of Toronto was held on Tuesday evening, the 4th of October, at the residence of Mr. James Goddard, No. 85 Welby St. E. Mr. John A. Paterson, M.A., Vice President, was in the chair. The attendance was large and included a number of ladies. The minutes of the previous meeting were read and confirmed.

The new system of calling the meetings of the Society by means of notices inserted in the morning papers, was criticised by Mr. Arthur Harvey, Dr. E. A. Meredith and Dr. Gerrard W. Smith. It was finally decided to let the matter stand pending the result of efforts to obtain a permanent place of meeting and the giving of the system a fair trial.

The following nominations for membership were made:-

Mr. F. A. Saunders, 109 Melan St. by Mr. Sumner and Mr. Harvey.
 Mr. John A. Copland, 99 Welby St. by Mr. Sumner and Mr. Harvey.
 Prof. A. C. McKay, Wilkes Univ. by Mr. Sparling and Mr. Miller.

The subject of a permanent place of meeting was brought up by the Acting Recording Secretary who referred to a scheme which guaranteed the holding of the meetings of the Society at the rooms of the Y. M. C. A., on the understanding that the regular

Colby

members of the Assⁿ were to be entitled to attend, but without the privileges of members.

While admitting that there were pleasurable features connected with the present system of from house-to-house-meeting, he contended that in the interests of the Society, a permanent place should be provided, even if it were necessary to raise a room. Many people felt a delicacy about going to houses where they were not acquainted, and he had no doubt that some of those who would prove to be very desirable acquisitions, would join the Society if it had a local habitation. With the information at present before the Society, he was not prepared to approve of the scheme now before it.

Mr. Harvey argued that the business of the Society was that of scientific investigation and not that of giving instruction, and he was not disposed to regard a very large membership as especially desirable. He objected to the view that the Society was a teaching body.

Mr. D. S. Row objected to any scheme that would merge the Society with any Association, and believed it would better accomplish its objects if it preserved its independent character. If additional funds would be required, he was confident they would be provided. He, for one, was willing to assist in raising them.

After some further discussion, a motion

Mr. R. B. Ellis, Mr. G. S. Pursey and others took part, it was moved by Mr. A. Elvins, seconded by Dr. L. W. Smith, that the subject of providing a permanent place of meeting be referred to a committee to be nominated by the chair.

It was moved by Mr. Harvey in council, seconded by Mr. Ellis, that the subject be referred to the Council with instructions to report at the next meeting. The motion, as amended, was carried.

The motion of Mr. Harvey, seconded by Mr. Pursey, Council was also instructed to inquire into and to report upon the condition of the finances of the Society and the arrangements with the payment of members of their fees, a subject brought up by Dr. Larratt Smith. A letter was read from the Treasurer who stated that the Society was not in a position to incur new liabilities.

The Chair proposed a meeting of the Council to be held at Dr. Larratt Smith's office, Oct. 7, at 4 p.m. The Council was requested to make arrangements for the observation of the Leonids, Nov. 13th & 14th.

The predictions of phenomena during the next two weeks having been announced, observations were called for. They consisted of reports

from Mr. Hollingworth, of Beatrice, Muskoka, respecting Aurorae in September; from Dr. Larratt W. Smith, who described a splendid meteor, apparently larger and brighter than Jupiter, observed by him about eleven o'clock on the night of September 30th, as it passed overhead in a north-easterly direction; from Dr. J. C. Donaldson, of Fergus, who is still engaged on intricate double-star work, and who has been endeavouring to ascertain the smallest possible aperture with which the companion to the pole-star can be seen; from Mr. A. F. Miller, who



from Mr. Hollingworth, of Peatrice, Muskoka, respecting Aurone in September; from Dr. Larratt W. Smith, who described a splendid meteor, apparently larger and brighter than Jupiter, observed by him about eleven o'clock on the night of September 30th, as it passed overhead in a north-easterly direction; from Dr. J. C. Tomblason, of Fergus, who is still engaged on Huggard's double-star work, and who has been endeavoring to ascertain the smallest possible aperture with which the comparison to the pole-stars can be given; from Mr. A. F. Miller, who

draws attention to the solar disturbances of Sept. 28th & 29th on which dates striking enlargements ~~of~~ of several groups in both hemispheres were noted and the fact was recorded that the activity simultaneously affected Northern and Southern Groups having the same latitude. The occurrence of Aurone on Sept. 28th ~~may~~ ^{may} be deemed of notice in this connection. On Oct. 3rd striking changes were seen in a Northern Group of spots, the corresponding Southern region being, however, unspotted; from Mrs. J. C. Gwynn, of Slava, who sends some

photographs of the sun, remarking that he had noticed that of late the atmosphere appeared to be darkened by particles of dust, or other substance; and from Mr. J. C. Ridout, who referred to his observation of the recent occultation of Mars, made while in quarantine on his return from Europe. Mr. Ridout also described his visit to observatories

in England, and said that a letter of introduction from the society had secured for him and party the privilege of being shown over Greenwich Observatory, a privilege by no means always granted. Mr. A. Elvius alluded to Professor Barnard's now famous discovery of a fifth satellite to Jupiter, which had been abundantly confirmed. In a let-

ter of congratulation, he had told Mr. Barnard that his discovery of the new moon and Professor Keeler's discovery of the motion of nebulae in the line of sight were discoveries so important that the erection of the Lick Observatory had been more than justified, even if nothing more were ever accomplished.

The Paper for the evening was read by Dr. L. W. Smith. It consisted of a well-sustained, able and highly instructive discussion, ^{by Dr. R. S. Byfle} of the observations of Mars reported during the present opposition of that Planet. Some of Dr. Roberts' deductions from observed facts were startlingly novel and his conclusions startling. The paper was listened to with deep attention, and was the subject of some remarks from Messrs. Harvey, Wells, Elvius, and others.

Mr. Elvius alluded to the alleged discovery by Signor Lohia Parrelli of double canals, and suggested that defects in vision, due to advancing age, might be the cause of such discoveries. He was aware of cases where dyals, formerly single and distinct with the telescope, had taken on the appearance of being double. His perversion of vision was, he was almost certain, due owing to changes in the eyes of persons growing more and more as they grew old. After some discussion,

The Society adjourned to meet on the 18th of October at the residence of Mr. C. P. Spang.

C. P. Spang.

Larratt & Smith

Vice-President.

J. C. Larratt
Acting Sec. Secy.

243. -
D. W. Smith

SPECIAL MEETING OF COUNCIL.

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Agreeably to instructions received from the Society, a special meeting of the Council was held on the 7th instant to consider several matters referred to it. Dr. Larratt W. Smith occupied the chair. The other members present were Messieurs Paterson, Elvins, Miller, Pursey, Ridout, Howell and Lumsden.

The Society's resolution with respect to a permanent place of meeting having been read, Mr. Paterson, seconded by Mr. Elvins, moved That a Committee, consisting of Dr. Smith, Mr. Lumsden and the mover, be authorized to arrange with the Young Men's Christian Association for the use of one of their rooms for the meetings of the Society, the meetings to be open to the members of the Association as visitors, the said arrangement to be terminable ^{by either party} on a month's notice. ---Carried.

The Treasurer submitted certain Statements showing the condition of the finances of the Society. These are herewith reported.

Mr. Arthur Harvey's suggestion relative to the due observation of the November showers of meteors having been considered, it was decided to request Mr. Harvey to make the necessary arrangements and to take charge of such members as were willing to assist.

The present position of the Recording Secretaryship having been discussed, Mr. Lumsden was directed to ascertain from Mr. Lindsay whether he would be able to continue to perform the duties of the office. It was suggested that he should receive some assistance. Mr. Lindsay's letter on the subject is attached to this Report.

Though no action was taken, it was the opinion of the majority of the members that monthly meetings of the Council should be held for the purpose of dealing with matters referred for consideration and for the better supervision of the interests of the Society.

All of which is respectfully submitted.

Larratt W. Smith
Chairman.

Toronto, 18th October, 1892.

243 1/8

THE TWENTIETH REGULAR MEETING of The Astronomical and Physical Society of Toronto was held on the 18th of October, at the residence of Mr. C.P. Sparling, 282 Victoria Street, Dr. Larratt W. Smith, Q.C., Vice-President, in the Chair.

The Minutes of the previous meeting were read and were confirmed after Mr. A. Elvins had called attention to the fact that the doubling of some of the lines on Mars and known as "Schiaparrelli's Canals," had been seen at the Lick and Arequipa Observatories during the favourable opposition of the planet in August.

Mr. Lumsden read the Report of the meeting of Council held on the 7th of October to consider the subjects of a permanent place of meeting; the condition of the Society's finances; the present position of the Recording Secretaryship, and the means to be adopted for the observation of the November showers of meteors. Beside dealing with these matters, the Report recommended that the Council should meet once a month. On motion of Mr. Elvins, seconded by Mr. G.G. Pursey, the Report was received and adopted, and the Council was authorized to carry out the arrangement with the Young Men's Christian Association verbally described by the Chair. Dr. Smith thereupon called a meeting of Council for Thursday, October 29th.

The following Active Members were duly elected:--Mr. F.A. Saunders, 109 McCaul Street; Mr. John A. Copland, 99 McGill Street, and Professor A.C. McKay, McMaster University, all of the City of Toronto.

The following applications for election to Active Membership were received:--Miss Jean Pursey, nominated by Mr. Lumsden, and seconded by Mr. Elvins; Mr. E.N. Williams, 29 Wellington Street West, Mr. J.Y. Reid, Jr., 87 Pembroke Street, and Mr. R.E. Chapman, 157 Denison Avenue, nominated by Mr. Aronsberg, and seconded by Mr. Elvins; Mr. G.R.G. Penson, 68 Churchill Avenue, nominated by Mr. Richardson, and seconded by Mr. Elvins, and Mr. John Henderson, nominated by Mr. A.F. Miller, and seconded by Mr. Sparling.

The communications read included a letter from Dr. Sandford Fleming, C.M.G., relative to the adoption of a new Astronomical Time Notation, and asking for a list of astronomers to whom the proposed Circular by the Society may be sent, and a letter from the editors of The Scientific American announcing the early publication in book-form, of the star-maps drawn for them by the late R. A. Proctor and published some years ago. Mr. Miller thought that the information desired by Dr. Fleming could be obtained from a Report prepared by Lieutenant Winterhalter for the United States Naval Observatory.

2452/3.

On motion of Mr. Sparling, seconded by Mr. Todhunter, the Corresponding Secretary was requested to write a letter introducing Dr. C.B. Langford, of Elenheim, to Professor Swift, Director of the Warner Observatory, Rochester, N.Y.

On behalf of Mr. Sparling, Mr. Elvins presented to the Society a large and handsomely bound album, suitably inscribed, and intended to receive the astronomical drawings, plates and views belonging to the Society. Mr. Elvins said he had inserted various plates and sketches and would be glad receive others to be thus preserved. Mr. Sparling was heartily thanked for his timely and valuable donation.

Mr. Aronsberg presented to the Society a copy of the October Number of Astronomy and Astro-Physics, received by him, for that purpose, from Mr. E.W. Gardner, of Toronto, with an intimation that it was Mr. Gardner's intention to send in the succeeding numbers of the Magazine as they are issued. On motion of Mr. Pursey, seconded by Mr. Aronsberg, the thanks of the Society were directed to be conveyed to Mr. Gardner.

Mr. Pursey, for The Lantern Slide Committee, made a report respecting the progress in getting together the views required.

Under the head of observations, Mr. Elvins described the difficulty he now meets with in seeing the Great Redspot on Jupiter, an object easily seen and drawn a few years ago; Mr. Miller referred to solar phenomena, and Dr. Donaldson, to further double-star work.

It was announced that, weather permitting, the Opera Glass Section would meet on Thursday, October 27th, for the study and observation of the Moon.

Dr. Larratt-Smith read two selected papers entitled "The Fuel of the Sun," and "Inter-astral Communication," the latter by M. Camille Flammarion. Both were of a popular character and extremely interesting, and were followed by discussion.

After the announcement of Predictions, The Society adjourned to meet on Tuesday November 1st, in the Library of the Young Men's Christian Association Building, Yonge Street.

*G. E. Sumner
acting Sec. Gen.*

*Confirmed.
Larratt-Smith
Vice President*

The twenty-first regular meeting
of the Astronomical & Physical Society
held in Y. M. C. A. library Nov 1st, 1912
Dr. Hamatt W. Smith in the chair.

The minutes of the previous meeting were
read and confirmed.

The following named lady and
gentlemen were duly elected active
members of this society

Miss Jean Pursey 189 M. Canal St

Mr. E. N. Williams 29 Wellington St

J. J. Reid Jr 87 Pembroke St

R. E. Chapman 157 Denison Ave

G. R. G. Pinson 68 Churchill Ave

John Henderson 21 Alexander

Communications were read from

Mr. R. J. McKeen Dundas

J. R. Cannon Elora

Mr. Hodder Acta

Mr. Elms called attention to the
obligation under which the society is
placed to Mr. Cannon who had forwarded
several photos of the solar eclipse of
Oct 25th

A letter from Mr. Peal of India
was laid over for a future meeting
as the subject would when it could
be brought forward as a paper.

Mr. Pursey reported the receipt of
Green obs. reports 1889.

The weather Bureau reports of Iowa
had been received from Mr. Hodder

The question of assistants to the officers now holding positions of Librarian, Treasurer and Rec. Sec. was taken up.

Mr. Elvins pointed out the ~~the~~ advantages to be obtained by appointing assistants and moved seconded by Miss ~~Pursey~~ Gray that elections be made.

Accordingly Miss Gray was nominated asst. Rec. Secy. by Mess Elvins & Pursey
Miss Pursey asst. Librarian by Mess ^{Mess} Lawrence
& Dewar

Miss Taylor asst. Treasurer by Mess Elvins
Thurs. day

These ladies were unanimously elected for the several offices.

It was then moved by Mr. Pursey and Mr. Lawrence that Mr. Fortkinker be appointed a member of the Council; this was carried.

Some discussion then arose as to time and place of Council meetings & Smith stated that on Monday first in each month at 4 pm. the ~~next~~ meetings could be held in his office, and it was decided to hold the meetings there at the times named.

Among predictions for the ensuing fortnight Mr. Kunsler called attention to the occultation of Saturn on the early morning of Nov 15th, also to the meteor (Leonids) between 11 & 15th Nov.

Reports of observations were then received. Several members had observed the eclipse of Oct 20. Mr. Ellis and Mr. Kunsler agreed as to the time of first contact 11 53 30, this being also the predicted time.

Mr. Warren of Kincaidine, recorded his observations made at a sunspot's transit.

Mr. Hadden of Alta also reported.

Mr. Harvey read a short paper descriptive of the phenomenon and noted particularly the difference between the edge of the sun proper and the edge "cut into" by the moon, the latter being absolute black while the former seemed projected upon a blue background.

Some discussion arose as to the possibility of seeing inequalities on the moon's limb. Mr. Hindray had noticed a broken edge where the moon was on the sun but supposed this was an optical illusion. Mr. Harvey stated that no power used on the moon shows inequalities on its outside edge.

Dr Smith recorded having observed the close approach of Mars to the star Delta Capricorni, almost on occultation.

Mr. Elvins read an extract from a private letter ^{from Professor Brinley of Leick Observatory} in which was mentioned that Prof Young of Princeton College had observed the 5th satellite of Jupiter in the 23 inch telescope.

Mr. Elvins read the paper of the evening, "Some thoughts on radiant matter" discussing light generally and giving an explanation of the path taken by a ray of light passing through a prism; the point being taken that the ray on emerging from ~~the~~ ^{the} prism is affected by the base being interposed between it and the moving particles of ether.

A short discussion followed taken part in by Mr. Dewar and Mr. Harvelly. The meeting then adjourned to meet Nov 15 at the residence of Dr. Hannah Smith.

H. W. H. H. H.
Nov 15

Lanark & Smith
V. P.

The 22nd regular meeting of the Astronomical and Physical Society was held at the residence of Mr Carratt Smith L. C. on Nov 15th.

Y. H. Viss. - President. Mr Smith - presided.

The minutes of the previous meeting were read and after some slight alterations were confirmed. Communications were read from J. A. Paterson M. A. and Walter Mc Bride. expressing regret that they would not be able to attend the meeting.

Mr Elvins reported having received a message from the President to the same effect.

The resignation of Mr Thos. Lindsay Rec. Secy. was read in which he stated the cause was his removal from the city and expressed much regret that this circumstance required the severance of his present official connection with the Society. Mr Lindsay also requested the usual letter given to travelling members.

It was moved by Mr Goddenter. Seconded by Mr Pursey and carried. That Mr Sumner be requested to draft such a letter as Mr Lindsay required - It was further moved by Mr Elvins. Seconded by Mr Goddenter and carried that Mr Smith and Mr Sumner form a committee to prepare such a resolution as would suitably express the Society's deep sense of obligation to Mr Lindsay for the efficient services he had rendered as Recording Secy. for the last two years. The motion carried unanimously.

The Librarian reported the receipt of the American Ephemeris and Nautical Almanac for 1873 and four copies of a pamphlet on

Sunspots by G. W. Linsley Columbia. Indiana
 Mr Smith. Predictions for the month of November for
 the Scientific American.

The weather having been unfavorable no observations
 of meteors were reported.

Mr Elvins reported having seen two spots on
 the eastern limb of the Sun

Mr Smith reported having observed with an opera
 glass, one large spot and two smaller ones on
 the 12 inst.

The paper of the evening was contributed and read
 by Mr John Phillips and was a continuation of a
 series entitled "How our Satellite may have found
 her Orbit" read before the Society last year.

The paper enunciates that ^{the} theory of projection accounts
 for the rapid revolution of Phobos the moon
 of Mars and that the same theory explains
 the revolutions of all the satellites which have
 direct motions in their orbits

Some criticisms were brought out in the discussion
 which followed - the retrograde motions of the Satellites
 of Uranus being specially mentioned by Mr Kidout.

Mr Phillips then announced that it is his intention
 to prepare at an early date a paper showing the
 bearing of his theory on this particular objection.

The meeting then adjourned to meet at the residence
 of Mrs Arthur Harvey 78 North Olive Rosedale on
 Nov. 29th. After adjourning the members were
 invited to partake of refreshments and a pleasant half
 hour was enjoyed socially.

Approved
 John A. Johnson
 Secy

The 23rd regular meeting of the Astronomical & Physical Society was held at the residence of Mr Arthur Starvey on 29th November 1892.

Mr John A. Patterson M.A. in the Chair

The minutes of the previous meeting were read by the acting Secretary Miss S. S. Taylor were read and confirmed.

A communication was read from Dr Harrold Smith regarding the renting of a room in the Y.M.C.A. Building and also one from Dr Golbroath requesting the Society to send delegates to a meeting shortly to be held for the discussion and consideration of certain social & economic questions, such as the relation propitior to labor, single taxation etc. This letter elicited some discussion but on reference to the clause in the Constitution defining the objects of the Society it was found to be entirely without its province to engage in the study of such problems as an organization.

Mr Hunsden reported that the Y.M.C.A. declined to entertain the Society's proposal with a view to holding the regular meetings in their building but that they were willing to rent the library room for \$2 per night the regular charge being \$3. The same gentleman announced that a room could be secured in the St George's Hall for the same figure viz \$2.

The question of the appointment

of a successor to Mr Lindsay as Recording Secretary then obtained the attention of the meeting and it was moved by Mr Elvins seconded by Mr Dodkin & carried that the rule relating to the election of officers be suspended for the evening and that a Secretary be at once appointed. An nomination being called for the acting Secretary Miss S. S. Taylor was proposed but declined the honor and the undersigned was then duly elected and installed.

The Librarian reported the receipt of the following publications:—

Monthly notices of the Royal Astronomical Society No 9. Supp No 7.

Journal of the British Astronomical Assn Sept 1892.

Royal Society Exchange list. Duplicator & Deficiencies.

Proceedings of Royal Society Vols 51 & 52.

Mittelsunge. Sept & Oct 1892.

Journal & Proceedings of the Hamilton Association for Session 1891-2.

It was moved by Mr Henry seconded by Mr Spurling & resolved that the Society's Transactions be sent the Hamilton Association & that it be placed on the exchange list.

Mr C. A. Chant of University College & Miss Bella Campbell were proposed for active membership by Mr Spurling & Dr Meredith.

Mr Remisden read the prediction of phenomena for the weeks next two weeks.

It stated that there were five comets now visible in the heavens viz, Brooks's, Swift's, DeWain's, Holmes's, & Winnecke's.

The following reports of observations made on the night of 23rd inst were presented;—

Miss A. L. Gray recorded the fall of 125 meteors radiating from Perseus within $\frac{3}{4}$ of an hour about 22 o'clock.

Mr C. J. Gilbert saw 300 within an hour.

Mr Elvins counted 30 in about 15 minutes.

Mr Miller also ~~saw~~ ^{witnessed} a considerable display of meteors & reported having made observations of a few sun spots since last meeting.

Mr J. F. Copeland wrote stating that he had seen 25 meteors in the 6 minutes ending 20.01 o'clock & reported having observed 2 Leonids on the morning of 23rd inst one being yellow & the other bluish white in color.

When the reports had all been presented an interesting discussion took place on the color & composition of meteors led by Mr Harvey.

Mr Elvins suggested and it was agreed that at the next meeting the topic for special consideration should be Comets & Meteors.

The paper for the evening was then read by the Chairman. It was from the pen of Mr Geo. Hindson and entitled "Work for Amateurs," and was

designed to give encouragement to Amateur workers by pointing out that ^{all} the discoveries in the science need not by any means be confined to those who were favored with a high mathematical education or were the possessors of delicate & expensive mounted instruments but that there were many paths which might lead to fame for the persevering student equipped with only very humble appliances.

It was agreed that the next 4 meetings should be held at the houses of the following gentlemen in the order named:- Mr. Potterson, Mr. Meldrum, Dr. Meredith & Mr. Pursey.

Mr. Potterson & Mr. Harvey agreed to prepare short papers to be read at an early date.

The meeting then adjourned.

J. H. Meldrum
Secy

Composed
John A. Fothergill -
Chairman

The 24th regular meeting of the Astronomical & Physical Society was held at the residence of Mrs John A. Paterson on 13th Decr 1892.

Larrah W. Smith Esq, B.L.D. in the chair
The minutes of the previous meeting were read and confirmed.

Mrs C.A. Chant of University College was elected as an active member of the Society

The name of Miss Belle Campbell, who was proposed at last meeting was withdrawn she being about to leave town.

Mrs ^{Harrison} Morrison of Keene N.H. was proposed as a corresponding member by Messrs Adonsberg & Howell and Miss Saunders as an active member by Miss Gray & Miss Taylor.

Communications were read from Mr Daniel Kirkwood of Riverside California calling attention to a paper of his published in a recent number of Astronomy & Astro Physics, from Mr Coopersall President of the Society, regretting his inability to be present & from Mr Huebner an old member of the Society conveying his regards to the members and stating that he hoped soon to be present at a meeting.

Mrs Pursey reported the receipt of the latest number of Astronomy & Astro Physics & Mrs ^{W. W.} Burdette of a work entitled the Scenery of the Heavens by J. E. Gore of Ireland.

The Treasurer presented a brief

statement of the financial condition of the Society showing a deficiency in ordinary current accounts of about \$10 with arrears to collect of \$88. He announced that the active membership of the Society had now reached 80.

Mr. Elvins reported on behalf of the Committee appointed to procure books for the Society with the folded donation fund that they had secured a copy of Fraunhofer's History of Astronomy from the library of the late Mrs S. Roberts after having made an unsuccessful effort to obtain it from London Eng.

It was moved by Mr. Horney in this connection that seconded by Mr. Toddhunter resolved that this Committee consisting of Messrs. Elvins, Miller, & Howell be continued in office.

Mr. Donaldson of Tergus reported some observations made by letter & stated that the sun had not been free of spots on any day during the present year. ~~on which~~ Mr. Elvins also reported having seen a few groups of spots since last meeting. Mr. Horney stated that he had seen 2 Andromids on the evening of 22nd.

Some newspaper extracts were read by the Chairman dealing with the history and nature of comets and a chapter on Fireballs. ^{the} ~~the~~ ^{was also} ~~the~~ ^{from} ~~the~~ ^{from} Mr. Forster's book on the Scenery of the Heavens. This latter referred to all the important displays of meteoric phenomena which have occurred during the last century.

Tuesday 27 - Dec 1892.

The 25th regular meeting of the Astronomical & Physical Society was held at the house of the Recording Secretary, 43 Grenville St. this evening.

The President, Chas. Cornwall Esq. M.A. in the chair. The attendance numbered 22 persons.

The minutes of the previous meeting were read and confirmed.

Mr. Horsey had no reports to make regarding the proposal that he & Dr. Meredith should interview Dr. Hahn with a view of having him address the Society at an early date.

Mr. Elvins stated that the Council of the Society had addressed Mr. H.A. Massey with a view of ascertaining his views regarding a suggestion which had been made that he should construct an observatory in a portion of the building which he intends to erect and donate to the City in the shape of a music hall. Mr. Massey's reply was read in which he stated that he did not quite grasp the meaning or requirements of the Society but that he would be glad to meet a deputation and discuss the matter some night next week. The Corresponding Secretary was instructed to write Mr. Massey and find out what evening would suit him and the appointment of the deputation was left to the Council.

Miss Sanderson of 299 Huron St was elected an active member of the Society

In connection with the nomination for Corresponding members of ~~the~~^{the} Harrison of Huron, Ont, at last meeting Mr Harvey raised the question of the length of time for which corresponding members ^{were} elected stating that he did not think it should be for a longer period than 5 years. The Constitution did not throw any light upon the point and the election was deferred until next meeting.

Mr Humsden gave the following notice of motion which bears somewhat upon the subject

~~That~~ that The Constitution of The Society be so amended as to create an Associate Membership to which may be appointed ladies and gentlemen, not residents of the City of Toronto whose ~~own~~ qualifications shall not, in the opinion of the Society, entitle them to be elected as Corresponding Members, an honorary rank to be reserved for astronomers and physicists specially deserving of recognition by the Society.

This being the last meeting of the Society for the year the nominations for officers for the ensuing year were proceeded with with the following results:-

Honorary President Hon G. W. Ross, Elected by acclamation
 President Chas Copson M.A. F.R.A.S. " " "
 Vice Presidents Horatio W. Smith D.C.L. D.C. " " "
 John A. Paterson M.A. " " "
 Treasurer Miss Gray & Mc Fodden
 Corresponding Secretary G. E. Humsden Elected by acclamation
 Recording " G. Humsden " " "
 Librarian G. G. Pursey " " "
 Councillors Messrs A. Harvey, A. Elwin, A. F. Miller

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President	Chas Corporal M.A. F.R.A.S.	" " "
Vice Presidents	Herbert W. Smith D.C.L. Q.C.	" " "
	John A. Paterson M.A.	" " "
Treasurer	Miss Gray & Mr Fodderman	
Corresponding Secretary	G. E. Humsden	Elected by acclamation
Recording	G. Humsden	" " "
Librarian	G. G. Pursey	" " "
Councillors,	Messrs A. Harvey, A. Elvins, A. F. Miller	

E. A. Meredith, D. J. Howell.

The matter of electing Assistants to the Treasurer, Librarian & Recording Secretary was left in abeyance till next meeting.

Mr. Pursey reported the substance of an interview he had had with Dr. Sandford Fleming regarding the adoption of cosmic time and also reported receipt of the following publications:-

Some Results & Conclusions derived from a Photographic Study of the Sun - by Hale,

The Ultra Violet Spectrum of the Solar Prominences by Hale,

The Yerkes Observatory of the University of Chicago by Hale.

The new Astronomical Department of the University of California by Millicent W. S. Linn.

Astronomy & Astro Physics for December.

At the request of Mr. Howell the Treasurer Messrs Goddard & Ellis were appointed to examine and audit his accounts with the Society for the past year.

Mr. Donaldson of Toronto & Mr. Copeland of Toronto reported some observations.

The paper for the evening was ~~read~~ prepared by Mr. John A. Paterson, entitled "Before the Beginning" & the object of it was to point out the conditions which probably existed before the time when interplanetary space was in a nebulous state the writer advancing the impact theory propounded by Dr. Collie of Edinburgh as accounting for all the peculiarities of nebulae. The essay

was a very able effort & was listened to with
 deep attention. The discussion which followed
 its delivery was taken part in by Messrs
 Caspwell, Elwin, Harvey, Devoe, Phillips & others.
 and was to be continued ^{another evening}.
 The Society then adjourned to meet
 at the house of Mr E. A. Meredith on 10th
 proximo..

E. A. Meredith

Secy

Amos Hooper
 Chairman -