

Minutes of Council

Jan - 13 - 91

The regular meeting of The Astronomical and Physical Society of Toronto was held on Tuesday Jan'y 13th 1891 at the residence of Mr A. Elvins. 11 St Vincent St.

The Vice-president occupied the chair The minutes of the last meeting were read and confirmed

Dr Foster of Toronto was duly elected an active member of the Society

Dr. Joseph Morrison M.A.; Ph.D.; F.R.A.S. of the Nautical Almanac Office Washington was proposed by Mr Bunsden and Mr Miller for Honorary membership

The Librarian ~~reported~~ presented a complete catalogue of ¹⁰¹⁰ ~~the~~ volumes already in the library.

The report of the Council was presented and read by the Recording Secretary and on motion of Mr Bunsden seconded by Mr Miller the following resolution was carried. That the minutes of the Council now read be approved and that in accepting his resignation Mr Pursey be tendered the thanks of this society for his services rendered in connection with it.

Mr Bunsday ^{called attention to} ~~gave~~ predictions of two occultations of 4 1/2 magnitude stars by the moon on the 16th and 24th of January between 20 and 21 o'clock

Mr P. S. H. Shearman of Brantford

sent a small map showing the position of Neptune and desiring some of the members to look for it: The position at present is in ~~the~~ Taurus.

Mr Remsden read a summary of an article on the Duplicity of Alpha, Cyrae, by Mr A Fowler in the Monthly Notices of the Royal Astronomical Society

He also reported having seen Venus one hour after sunrise the moon being visible at the same time

The next meeting was announced to be held at the residence of Mr W. B. Ross 44 Isabella St Jan^y 27th 1891.

A paper contributed by one of our honorary members, Prof. Daniel Kirkwood L. B. D on the Rotation Periods of Mercury and Venus was read, in which some new and important ideas were given

Mr Phillips read his second paper on the "Remar Orbit" occasioning considerable discussion

The meeting adjourned to Tuesday Jan^y 27th at 20 o'clock

D. J. Howell

Recording Secretary

A. Elvin Secy

The regular meeting of the Astronomical and Physical Society was held at the residence of Mr W. S. Ross 44 Isabella St Tuesday January 27th 1891.

The Vice President in the chair

The minutes of the last meeting were read and with one correction confirmed

Dr Joseph Morrison M.A. Ph.D. F.R.S. was duly elected an honorary member of the society,

Mr E. Harcourt,

proposed by Mr D. J. Howell and Mr Muller for active membership.

A communication ^{was read} from Sir Adam Wilson declining to act as Treasurer of the society. The ^{Recording} Secretary was requested by the chairman to act as Treasurer until the annual meeting in February

A communication from Mr Mungo Turnbull was read in which he urged the society to take steps to have a telescope of the first class erected in Toronto. The Recording Secretary was instructed in acknowledging the letter to state that the society cannot at present see their way to take any action in the matter

The Librarian reported the receipt of a pamphlet from the Naval Observatory, of Washington. Their Annual report, also the Index of the Publications of the Astronomical Society of the Pacific

The Librarian also reported that the curtain and rod. had been placed on the book ~~shelf~~^{case} of the society at an cost of \$2.25

Mr Miller reported the observation of a group of spots which appeared about the 15th and which showed the characteristics of the maximum period. they were also observed by Mr Debell and Mr Lindsay.

Attention was called to a letter from Monsieur Berry of the Paris Observatory ^{which appeared in Jan'y No. of Knowledge} relative to several experiments in photographing a Lyra and in none was he able to confirm Mr Fowler's observations.

The next meeting was announced to be held at the residence of Mr G. B. Abrey, 23. Beaconsfield Ave. on Tuesday February 10th

Mr Jno. Phillips third paper on the Kumar Orbit was read by title.

Mr Lindsay undertook to keep a book of Newshaper or magazine clippings of items relating to Astronomical or Physical matters

Mr G. E. Lumsden read a paper entitled "Notes on Constellation study" He gave an account of the difficulties that he experienced in learning the position of stars

and instanced one or two things that must be understood before ~~an~~ intelligable work can be accomplished.

He gave an excellent method of measuring, roughly, the position angles of stars. The paper was very interesting and full of suggestive thoughts.

After a brief discussion the meeting adjourned to Feb'y 10th - 1891

D. J. Howell.

Recording Secretary

Confirmed.

A. W. S. S.

The regular meeting of the Astronomical and Physical Society was held Feb'y 10th at the residence of Mr P. B. Abrey 23 Beaconsfield Ave.

The vice president in the chair

The minutes of the last meeting were read and confirmed

A communication was received from Sanford Fleming C.E. C.M.P. accepting honorary membership and thanking the society for the honor conferred upon him.

A communication from Mr Kedge of Chicago Ill. was received thanking the society for electing him a corresponding member

Also a communication was read from Mr Jarvis asking for information re the Star of Bethlehem

The Recording secretary read the notice of assessment in connection with the book case which had been sent to the members of the society.

Mr Miller reported his observations of Sun spots.

Mr Robinson presented a drawing of the group of Jan'y 18th

Mr Lumsden called attention to the formation of the Mathematical and Physical Society and pointed out the danger of confusion between the two names. - The Corresponding secretary was directed to write

Mr Ellis
read a
very inter-
esting paper
on Twenty
Four Hours
Observation
of Sun & Planets

to that society acquainting them
with the possibility of confusion
The next meeting was announced
to be held at the residence of Mrs
A. F. Miller 280 Carlton St as it
would be the annual meeting a
full attendance was asked for

Mr Abrey showed the
society a collection of ~~lectures~~ ^{mathematical}
and astronomical instruments of the
highest design and workmanship
explaining their uses and beautiful
construction many of them showing
improvements and new features
as suggested by Mr Abrey.

After adjournment Mrs Abrey
invited the members to her table of
refreshments. A vote of thanks
was tendered Mr Abrey for the
delightful and profitable evening
and for the kind hospitality of the
hostess who showed herself quite
in touch with astronomical matters

D. H. Howell

recording secretary

Charles Carroll

A meeting of the Council of the Astronomical and Physical Society was held at the residence of Mr. L. Musden Wednesday February 18th at 20 o'clock

The President in the chair
The report of the committee of publication was read in full and with some corrections and additions approved

Estimates were also presented from several firms for the printing of the annual report and that of Messrs Brough & Caswell seemed most acceptable to all

It was thought desirable to have 500 copies printed instead of the 250 for which estimates had been received and the committee were desired to obtain the additional information as to cost of increased quantity

Although no recommendation was made the majority concurred in the suggestion ~~as to~~ that the price of the publication be 50 cents with special terms to members for extra copies.

Some suggestions relative to the election of officers were made after which the Council rose

H. J. Bowell

Recording Secretary

The Astronomical and Physical Society
of Toronto

Treasurer's Statement

Year ending Feby 24th/1891

Dr
To Membership Fees. 39.00
Assessments received 6.00 \$45.00

Cr
By Incorporation Fees 1.50
" Printing Const. + Bylaws ac 5.25
" Printing and Stationary 4.80
" Treasurers Act Book 1.25
" Postage and Stationary 7.55
Cash on hand 20.35
24.65 \$45.00

Dues unpaid 7.00
Assessments " 6.00
\$13.00

due on Bookcase
\$7.50

W. Howell acting Treasurer

The annual meeting of the Astronomical and Physical Society of Toronto was held at the residence of Mr Miller 280 Carleton St Feb'y 24th 1891

The president in the chair

The minutes were read and confirmed

A communication from Dr Morrison thanking the society for electing him ~~accepting his election~~ an honorary member also one from Mr A. W. Murphy tendering his resignation as an active member.

The librarian reported the receipt of one volume

The committee on publication presented their report accompanied by a draft of the proceedings which had been approved by the executive.

It was ~~was~~ moved by Mrs Lindsay seconded by Mr Pursey the report be received and adopted

An amendment was moved by Mr Reimden seconded by Mr Miller that the words price be fifty cents and that the words ~~at the rate of~~ many cents each, being a slight advance on cost" be struck out and the words "at half price" be substituted. Carried the main motion was then carried

It was moved by Mr Elvins seconded by Mrs Lindsay that 500 copies of the proceedings be printed ~~be printed~~ carried

The secretary presented his annual report in which he reviewed the work of the society for the year and gave an account of its growth and membership

The treasurers statement showed
 a cash balance on hand of \$24 67/100
 arrears of dues and assessments \$13 00
 with an account unpaid of \$7 50
 The Librarian presented a complete list of catalogues of the books in the library
 It was moved by Mr Lindsay
 seconded by Mr [unclear] that the
 reports be received and adopted ~~and~~
 and that the society thoroughly
 appreciate the labors of the Secretary,
 Treasurer and Librarian and that
 the thanks of the society is hereby tendered
 to them for their efficient service carried

The election of officers was then
 proceeded with.

The following were nominated
 President -- Charles Carpenter M.A., F.R.S.C., F.R.A.S
 by A Elvins seconded by G. H. Miller
 Vice President Andrew Elvins
 by T. G. Pursey seconded by R. Dewar
 Treasurer D. J. Howell
 by A Elvins seconded by A. F. Miller
 Corresponding Secretary F. E. Lumsden
 by A Elvins seconded by D. Geo. Ross
 Recording Secretary Thomas Lindsay
 by D. J. Howell seconded by R. Dewar
 Librarian A. F. Miller
 by Thos. Lindsay seconded by D. Geo. Ross
 and were unanimously declared elected

On motion of Mr Elvins an
 editing committee consisting of the two
 secretaries, the librarian and Mr D. G. Ross
 was appointed

The President in his annual address reviewed the progress made in the astronomical world; during the year ^{and} made reference to the work of Prof Pickering of Harvard on Binary Stars Schaperalli of Milan on the rotation periods of Mercury + Venus
 Dinner in applying the spectroscobe successfully to ascertain the sun's ^{rotation} ~~rotation~~
 Langley's investigations of the sun's temper-
 atures. show that ~~the temper~~ at the hottest period it does not rise above 0° Centigrade and stated that these observations gave some color to the possibility of Mr Peal of India's theory that lunar surface is covered with ice and snow.

In some conversation which followed Mr Elvins stated that Mr Peal's theory was not new as he had published the same views in a paper on the "Moon its motion and Physical constitution" in the Astronomical Register of 1869. The next meeting was decided to be held at the residence of Mr G. S. Pursey 189 W. Canal St March 10th to which date the society adjourned.

W. J. Howell

Recording Secretary

A. Elvins.

The Regular Meeting of the
Astronomical and Physical
Society of Toronto was held at the
residence of Mr G. G. Pursey 189 McEaul st,
Tuesday March 10th 1891,

The vice-president occupied the chair.

The minutes of the previous meeting were
read and confirmed.

Mr G. B. Hbrey of 23 Beaconsfield ave. was
nominated for active membership by
Mr Stevens seconded by Mr Lindsay.

Mr Pursey gave a report, incidentally, of
an entertainment at which the Society's
lantern slides had been exhibited.

Mr Miller reported that the spots on the
sun visible during the past two weeks
had been of less interest than usual.

He called attention to the work now being
carried on by Herr Hippman
who has, by an entirely new method, succeeded
in photographing in natural colours,
this is matter of the greatest importance to
science.

Mr Miller read an extract from a letter
received by him from Mr John Goldie
of Salt, corresponding member of the
Society.

Mr Goldie authorized the Society to purchase
books for the library to the extent of
thirty dollars, at his expense.

It was moved by Mr Phillips
seconded by Mr Dewar that a vote

of thanks be tendered M^r Galdie for his kind offer which is thoroughly appreciated by the Society. Carried

It was decided that M^r Elvins and M^r Miller should make the selections of books.

The Librarian reported having received a volume "Easy lessons in Astronomy" from the Warner Observatory and also no 14 vols of the Pacific Coast Society's reports.

The necessity of procuring suitable stationery for the members of the Society was discussed. M^r Howell undertook to arrange this matter.

It was moved by M^r Miller seconded by M^r Howell that a committee be appointed to arrange dates and places of future meetings, and prepare a list of papers to be read.

The motion was carried and Messrs.

Elvins Miller Patterson and Ridout will compose the committee.

M^r Elvins read a paper on the "Red spot and belts of Jupiter" in which was discussed the possibility of there being a ring system in process of formation.

The regular meeting of the
Astronomical and Physical
Society of Toronto, was held at
the residence of Mr D J Howell
218, Bloor St March 24 1891;
the minutes of the previous meeting
were read and confirmed.

Mr G. B. Abney of 23 Beaconsfield Ave
was duly elected for actual membership.

Mr Miller gave a list of books which
it was considered desirable to purchase:

Grant's History of Astronomy
Miss Black's do do

Newcomb & Holden's astronomy

Langley's New astronomy

Young's

Mathematical Tables

Star Atlas

and stated that an order had
been given to a wholesale house
for these works.

Mr Howard reported having written
to Mr Saldie in accordance with the
resolution passed at the last meeting.

A communication was read from Mr
F H Manley in behalf of the Macdonald
& Physical Society. The matter of similarity
in names would have this attention.

A letter was read from Dr Morrison
in which he stated that he was pre-
paring a paper upon the elements of
Mercury & Titan with a view to the
construction of tables. This paper

he would ask the Society to read and publish.

Mr Miller read a letter from Mr. Shearman who stated that his claim to priority in the matter of connecting magnetic disturbances with the appearance of spots upon the Sun's Eastern limb had been admitted by Prof. Young.

Some discussion followed this and Mr. Elwood stated that the correctness of the theory might be tested by comparing the records of the appearance of the sun with the records of magnetic phenomena which are to be had for many years back at the Toronto Observatory.

The committee appointed to arrange meetings reported having filled in dates to the end of September. Papers for the evenings are filled in only in part and members are invited to contribute original papers to complete the programme.

Mr Miller reported the Sun's surface as being still uninteresting.

Mr Lindsay reported having successfully observed the occultation of 121 Tauri 6th May star on evening of March 16th with a non-achromatic telescope 2 in.

Attention was called to the fact that the next new moon April 8th completes the 122nd cycle of the Saros reckoning from the

eclipse of Hathorles, S.B. 310 Aug 15.
 Mr Lindsay read a paper on the
 Transit of Mercury illustrating
 the graphic method of determining
 the times of contact, and from the
 rigorous formulae given in the Ephemeris
 gave the moment of first external
 contact May 9th 6.52^m 44^{sec} standard
 Time.

Time of apparent transit 7^h 27^m 13^{sec}

It was decided to make some
 arrangements for observing the transit
 and Mr Miller suggested that a committee
 wait upon the president Prof Carpenter
 and request him to furnish weather
 suitable for the occasion.

It was decided to hold the next
 meeting at the residence of Mr
 Ed Ridout 117, Beverly St April 17th
 and the meeting adjourned

Mr Lindsay
 Secy.

A. Glavin B. P.

The regular meeting of the Astronomical & Physical Society of Toronto was held at the residence of Mr J.G. Bidont 47 Beavelly St April 7th 1891

The vice president occupied the chair. Minutes of previous meeting were read and confirmed. Mr Elvins referred to the programme of future meetings and again solicited original contributions from the members.

A letter was read from Mr Howell who was unable to attend. He called attention to the fact that the annual fee for 1891 was now due.

The following resolution was moved by Mr Bidont and Mr Parsy and unanimously carried.

Resolved that in the opinion of this Society the subjects of Astronomy & Physics are worthy of more general and more systematic attention than they now receive; that regular courses of lectures, delivered under conditions which would enable non-university students to profit by them, and accompanied by class exercises and discussions, would be an effective means of commending them to public attention, and that the usefulness of such courses might be greatly increased if recognition by means of certificates of work done were extended to them by the Provincial University.

a photograph of Mr Gould's observatory 73
taken by Mr Howell was shown to the
members. It was an excellent picture.

Mr Elvins and Mr Lumsden presented
drawings of Saturn taken at the telescope.

Mr Lumsden reported having observed
the auroral display of March 30th,
which he connected with the appearance
of a spot on the Sun's limb.

Mr Miller reported having observed
faculae on the sun prior to the appear-
ance of the spot, and called attention to
the theory recently discussed that the
faculae are directly connected with the
sun spots, ~~and~~ magnetic disturbances,
more so than the spots.

Mr Lumsden presented a full account of
his observations March 4, 5, 6, 7, which, it
was decided to file among the Society's
papers. He had observed the close approach
of Jupiter and Venus on April 7th, both
being in the field of view in the heliometer
piece. He remarked that the south pole of
Venus was coloured a deep orange which
shaded off through yellow to intense blue
at the north pole. The disc of Jupiter
was of uniform colour so that the varying
colour of Venus was not due to the
performance of the telescope.

The paper of the evening on ocean currents,
winds & tides was read by Mr Ridout,
who gave in detail the mathematical
analysis of the luni-solar tidal attraction,
illustrating the problem by diagrams.
He then explained the laws of storms and
currents showing how these are connected

with the form and rotation of the Earth under the sun's influence. The general climate of British Columbia was explained by a reference to the winds and currents that prevail in the North Pacific.

The paper proved of great interest and considerable discussion followed.

It was decided to take up the subject again.

The meeting then adjourned till April 21st at the residence of Mr. Lumsden 719 Ontario St.

John Lindsay
Rec. Secy.

A. Brown

The Regular Meeting of the
Astronomical & Physical Society
of Toronto was held April 21/91
at the residence of Mr G. E. Lumsden.

The vice president in the chair,
the minutes of the previous meeting
were read and confirmed.

Prof Gorpmael M.A. F.R.A.S. was
nominated for life membership by
Mr Lumsden seconded by Mr Miller.

Mr Miller read a communication from
Mr Goldie of Gaet.

Also read an extract from a personal
letter from British Columbia calling
attention to the widely distributed circular
of Sir R. Wall asking information from any
observers on matters connected with
meteors etc.

A letter was read from Mr Shearman of
Brantford, supplementing his former
letter on the subject of magnetic disturbances.

Mr Lumsden had received a letter from
the Editor of "Dominion Illustrated" who
was willing to publish sketches of objects
connected with our studies provided the
cuts were made in a particular manner
which he described.

Mr Lumsden had also received a letter
from Herr Gaten in reply to his letter
of thanks for photographs of Jupiter.

Some discussion arose regarding the standing of the members of this society, as such and it was moved by Mr Howell seconded by Mr Miller that the ^{following} resolution be adopted:

Resolved, that it is not advisable for any member of this society to write after his name the letters M. A. P. S. which would naturally signify "member of the Astronomical & Physical Society." This was carried.

Mr Miller reported having successfully observed the occultation of "Iota Leonis" 6th mag. star on evening of April 18th.

Mr Elvins reported observations of a sun spot on the Eastern limb which had come round by rotation on 21st inst.

A visit was reported which ~~some~~ ^{three} of the members, Mess Elvins, Miller & Lindsay had made to Sir Adam Wilson's Observatory. The celestial globe of new design by Mr Trenchard was inspected and its uses explained.

The six-inch reflector mounted in the observatory gave excellent views of Saturn and the moon, the spectrum defining with perfect distinctness.

The paper of the evening was then read by Mr G. E. Humsted, "A plea for common telescopes".

The history of the construction of the telescope was briefly sketched and also the work

which has been done and is being done by instruments which come under the designation "common."

The various tests were named by which the excellence of a small objective is determined, and the fact noted that when an object is once discovered by a superior instrument it may frequently be seen in a comparatively small telescope.

Mr. Lumsden expressed a hope that the tiny moons of Mars may be yet seen in telescopes such as are mounted in this country.

In support of Mr. Lumsden's paper

Mr. Howell showed a small telescope mounted conveniently on a tripod stand, and which gave very good views of several celestial objects.

Mr. Clark spoke at length on the subject; ~~and~~ sketched the work done by his instrument since aperture; and showed several drawings of planets &c. which had been taken by him at this instrument.

[Mr. Noble a visitor of the evening had been decided by the Botanical section to arrange a day for an excursion, when the members of the A. & P. S. might take some instruments with them and take some observations which would be mutually agreeable and profitable.

Mr. Noble was assured that the mem-

Read
before
the minutes
of the paper
of the evening

bees would take pleasure in joining
in such an excursion but they ^{could} could
not be fixed at present.]

The next meeting was arranged
for May 5th at the residence of
Sir Adam Wilson and the
meeting adjourned

Thos Lunday
Rec. Sec.

Charles Farquhar

The Regular Meeting of the
Astronomical & Physical Society
of Toronto was held at the residence
of Sir Adam Wilson Spadina Cr.
May 5th 1891.

The president occupied the chair.
The minutes of the previous meeting were
read out confirmed.

It was moved by M^r Lumsden and
seconded by M^r Miller:
That whereas M^r Chas. Carpmael, an
Active member and the President of
this Society, has intimated that it is
his intention to become a life mem-
ber thereof; be it resolved that this
Society concurs with pleasure of M^r
Carpmael's intention; that M^r Carpmael
be and is hereby elected to be a life
member of this Society and that its
appreciation of the advantages derived
by it from ~~its~~ his relation with it, be
and the same is hereby expressed.
Carried.

It was moved by M^r Howell seconded
by M^r Lumsden, that whereas this
Society desired to mark in some be-
fitting manner its appreciation of the
interest taken in its welfare by
M^r John Saldie, of Gaet, a corresponding
member, be it resolved that M^r Saldie
be and that he is hereby elected
to be an active member of this Society,

and that for this purpose any Rules in that behalf be suspended.

Carried.

It was moved by Mr Ross seconded by Mr Ridout. That, whereas this Society desires to still further mark its appreciation of the liberality of Mr Goldie, of Galt, an active member of this Society, in donating a sum of money to purchase books for its Library, be it resolved that Mr Goldie be and that he is hereby elected to be a life member of this Society and that for this purpose any Rules in that behalf be suspended.

Carried

Mr Lumsden read a letter from Mr Kuehnan of Leith Observatory, in which the writer spoke very favorably of the small telescope and wished the Society every success.

A letter also from Mr Browning of London was read. He also wrote in praise of the work done by small apertures.

A letter from Mr Goldie was read, in which he referred to the closing in of Saturn's ring.

A letter was received from the managers of the "Canada Life Assoc" granting the use of their tower to observe from on the evening of May 9th. It was decided to hold an informal meeting there to observe the transit of mercury.

The Librarian reported having received
no. 11. Cincinnati Observatory reports.

Mr. Lumsden reported having observed
sun spots on April 26th, their appearance
coinciding with a marked change in the
weather.

Reported also having observed ~~the close~~
approach of ~~the small star~~ ^{to a small star} ~~to the moon~~,
the phenomenon affording an opportunity
of noting the actual motion of the Moon in
her orbit.

Reported also having taken advantage of
the fine weather to observe Saturn and
had seen seven of the satellites in his large
reflector, and presented a sketch of
the planet showing the shadow of the
ring.

Mr. Miller reported his observations of sun
spots April 26th

He had noticed the phenomenon of a
train of spots resolving into one irregular
spot large and then closing up, and this
occurring in both hemispheres of the
Sun.

The phenomenon was of importance by
reason of this latter fact as the same forces
were at work in the different parts of the
surface to produce the same effect.
The papers of the evening were then
read.

First a paper by Mr. Turnbull on
"Transits of Mercury & Venus"

which proved of much interest. The importance of these phenomena was dwelt upon and their history in the past briefly sketched.

A diagram was introduced showing the path of the planet across the solar disc on May 9th.

Mr. A. Elvins then, read a paper on Planetary Rotation illustrated by diagrams and a model.

In the latter a disc was made to revolve at unequal rates of speed to represent the unequal orbital motion of a planet. As the ~~ball~~ disc revolved it took up a rotation,

Mr. Elvins held that a planet at every perihelion passage had a slight increment of velocity imparted to its outer particles and this in time caused the planet to rotate.

The paper caused a great deal of discussion. The president ~~held~~ Mr. Carpenter held that if the disc in this model were poised exactly on the centre of gravity and made to revolve without jerking, it would not rotate; and pointed out also that the laws of dynamics consider a rotating body as a mass that is all collected at ~~at~~ one point, the centre of gravity, and that we cannot, correctly speak of one part of a rotating body going faster than another part.

These objections and others, Mr. Elvins had considered and was prepared to meet

but the lateness of the hour prevented further discussion.

The subject will be resumed as Mr. Elvins desires a full investigation of the theory that its truth or error may be established.

The meeting then adjourned to May 19th at the residence of Mr. D. G. Ross in Isabella st.

After adjournment the members were entertained at refreshment by Sir Adam & Lady Wilson.

J. H. Lindsay
Sec. Secy.

A. Elvins

An Informal Meeting of the N. & P. S. was held on the evening of May 9th on the Tower of the Canada Life Building to observe the Transit of Mercury.

There was a large attendance of members and visitors and several Telescopes were mounted in the hope of observing the phenomenon ~~until late~~

Until 18.30. the sky was very clear and the sun well defined but it is much to be regretted that immediately afterwards, the sun began to sink in banks of mist and cloud and efforts to obtain a glimpse of the planet on the disc were entirely unsuccessful.

Although the Society is unfortunate in not being able to record an observation of this rare phenomenon yet still it is a matter of congratulation that so many of the members and their friends recognizing the importance of the occasion attended this meeting and doubtless many did so at considerable personal inconvenience.

Thos Laiday
Rec. Secy.

A. Gibson

Regular Meeting of the Astronomical & Physical Society of Toronto, held at the Residence of Mr D.G. Ross May 19th 1891

The vice president in the chair
The minutes of the previous meeting were read and confirmed

The following named gentlemen were nominated for active membership:

| | | |
|--------------------|----------------|--------------------|
| Mr J. B. Donaldson | of Pergus. Ont | Lindsay Hornell |
| Mr Arthur Harvie | Toronto | Pursey Hornell |
| Mr Saarberg. | do | Lindsay Pursey |

A communication was read from the Customs Dept at Ottawa stating that the question of allowing optical instruments for students to come free of duty would be considered.

The Librarian reported having received two copies of Washing observatory reports and appended for 1885. These reports contain the notes on Saturn by Asaph Hall and are recommended to the members for perusal.

The following reports were received of observations of the transit of Mercury:

From Sir. Adam Wilson who sent a sketch.

From Mr Arthur Harvie & Mr G. H. Mildner.

From Mr James Warden of Kincaidine and

Mr Mr Alex McEwen of Severall both of whom sent sketches.

From Mr J. B. Donaldson of Pergus Ont who reported the interval contact $6.57.45$ which if correct verified the predicted time.

From Mr Skarner of Beantford.

The annual report was presented in printed form and copies distributed to the members.

M^r Miller and M^r Linsington moved a vote of thanks to M^r Jewson for his efforts in the matter of compiling the report.

M^r Jewson in reply said that such a vote of thanks must include his colleagues and it is understood that the members generally appreciate the labours of the publication committee and are very well pleased with the result.

M^r Miller reported his observations of the sun and a report from M^r Donaldson was also read.

M^r Jewson reported having observed the occultation of K Semiorum at 10^h 29^m

May 12

M^r Miller had observed this also and agreed with M^r Jewson to a second of time.

(Observations independent)

M^r Jewson also reported Occultation of D H C 226^b May 14. Conditions were not very favourable and the time 8.28^m did not at all agree with the predicted time. This was noted.

The paper of the evening was read by M^r G. G. Pusey on "Imponderable Matter", in which the idea was advanced that we may arrive at some understanding of the ultimate atom by considering it to be "crystallized spirit".

Some discussion followed:

Mr Dewar was glad that the society had remembered the word "Physicist" in connection with its studies.

Mr Elvins giving credit to Mr Pusey for the care he had bestowed upon the preparation and delivery of his essay, admitted that the ideas were very much advanced and not to be readily grasped - metaphysical in fact.

Mr Paterson considered that Mr Pusey had even gone beyond the "meta" but nevertheless took Mr Pusey's essay home in his pocket, & read at leisure.

The meeting then adjourned to June 2nd at the Observatory.

Thos Hurday
Rec Sec.

A Elvins. P.P.

The regular meeting of the Astronomical & Physical Society was held at the residence of Observatory June 2nd the vice president in the chair.

The minutes of the previous meeting were read and confirmed.

A message through M^r Dewar was received from Sir Adam Wilson who regretted being unable to attend.

M^r James Warren of Kirkcaldie was nominated for corresponding membership by M^r Lumsden and M^r Miller.

The following named gentlemen were elected active members.

M^r Arthur Harvie Toronto

M^r A. Baronberg do

M^r J. B. Donaldson Tugue's out

A communication was received from Rev. E. A. Wilson Sault-Ste-Marie. That gentleman had observed the transit of mercury through a small telescope and asked advice in the matter of properly using his instrument.

A report of observatory work was received from Rev. J. Espin Darlington Eng.

The Publication Committee presented their report, with detailed statement of expense of printing &c the total being \$52.25.

It was moved by M^r Howell seconded by Prof Richardson that the report be adopted and the committee discharged. This was carried unanimously, perfect satisfaction with the result of the committee's

Labours being expressed.

Mr Miller & Mr Lumsden reported their observations of the sun.

Mr Lumsden showed some sketches taken at his small telescope and mentioned having seen small objects passing across the field of the telescope while directed at the sun.

This had puzzled him to explain and during the discussion which followed Mr Elms stated that the same phenomenon had been observed at the eclipse of 1868. and that a Swiss astronomer had endeavoured to explain it by saying that the objects were snowflakes in the atmosphere.

The librarian reported having received two of the books of the John Goldie donation which had been ordered some time ago.

also some volumes of Public Works reports from Mr G. B. Sillclair of Joliette Que.

and a work by this gentleman entitled "Canada from Atlantic to Pacific" & ^{Revised} The papers of the evening were then ^{read} read.

One contributed by Mr J. S. H. Skermer on the connection between "solar disturbances and terrestrial magnetism"

One contributed by Mr D. K. Winder description of his spectroscopic observations of mercury. Mr Winder arrived at the conclusion that the intensity of the Telluric lines proved the existence of great quantities of a peculiar

Vapor in the atmosphere of the planet,
 a paper was also read contributed by
 Mr. R. Ridgway, this was an his-
 torical sketch of the progress of
 astronomy from the earliest ages
 till the Christian Era.

After some discussion the meeting
 adjourned to June 16th at the
 residence of Mr. A. G. Miller.

Thos Lindsay
 Recd.

A. G. Miller

Report of Publication Committee
of the Astronomical and Physical Society
of Toronto

Mr President:—

Your committee appointed to prepare the matter of and to publish the proceedings of the society for 1899-91 desire to report that they have completed the work and that 500 copies of the publication have been received by the society and were presented at the last meeting. The cost of publication is as follows

| | |
|---|---------|
| Engraving Diagram for Wm Morrison | |
| Paper | 75 |
| Lithographing 500 plates for Frontispiece | 4.50 |
| Printing and binding 500 Proceedings | 45.00 |
| " " 500 Erratum Slips | 2.00 |
| Total | \$52.25 |

All of which is respectfully submitted
on behalf of the committee
D. J. Howell

Report of Committee.
of Publication for

1890 - 91

D. J. Howell
Chairman

Toronto
June 2nd 1891

The regular meeting of the Astronomical & Physical Society was held at the residence of Mr. A. P. Miller 280 Carlton St June 16th.

The vice-president occupied the chair.

The minutes of the previous meeting were read and confirmed.

Mr. Buson Jones was nominated for active membership by Mr. Miller seconded by Mr. Lindsay. Mr. Lumsden reported having written to Mr. Wilson of Saint-St. Marie in reference to telescopic work and had requested this gentleman to become a member of the Society.

The following communications were received:

From Mr. J. B. Donaldson, describing a meteor seen by him on June 6th.

From the following named gentlemen acknowledging the receipt of the "Annual Report" and congratulating the Society upon their progress:

Secretary, Royal Society of Canada ✓

Prof. Pickering of Harvard ✓

Prof. Langley Smithsonian Institute ✓

Editor, L'Espresso ✓

Mr. Brashear of Allegheny ✓

Prof. Frisby Washington ✓

Mr. Sanford Fleming ✓

Prof. Holden Lick Observatory ✓

Prof Daniel Kirkwood

Capt^m McNaughton, U.S. Naval Observatory
 Prof Sumner of California who
 kindly sent his papers on double stars.
 A letter was also read from the Hon
 G. W. Ross wishing the society succeed
 and promising his aid at a public
 meeting if such were held.

The librarian reported having received
 additions to the library, among
 them two volumes of Royal Society
 Reports, the Smithsonian Report
 and Report of Sect. of Agriculture.

Mr Miller called attention to the im-
 portance of telescopic lenses which a
 firm of the city Mess Michall Bros
 had made, and recommended that
 the members should see them.

Mr Howell seconded by Mr Miller gave
 notice of the following motion to be
 submitted at a future meeting.

"It is doubtless desirable that this
 Society should be increasingly useful,
 and to this end it is suggested that
 we meet on alternate Mondays at a place
 to be appointed, for the study of double, col-
 oured and variable stars, opera glasses to
 be the instruments used as a rule.

The section to commence its studies at
 the pole and proceed onward to greater
 polar distance as fast as the proficiency
 of its members warrants; other details

to be left to the leader of the section Mr. Humsted, who first suggested that course".

Mr. Dewar gave notice of the following motion to be submitted at a future meeting "that the routine work which takes up the greater portion of the evening which should be devoted to the paper of the evening, and its discussion should be entrusted or a committee be appointed, to ^{consider the advisability of} placing instructions upon the aforesaid routine work"

Observations:

Mr. Humsted and Mr. Elliot reported having seen bright points upon Saturn's Ring, the same which had occasioned some correspondence in the English Scientific journals. No explanation is yet given.

Mr. Miller reported having observed the phenomenon spoken of at a previous meeting, the appearance of small objects in the field of view when looking at the sun; and stated that on the particular occasion he referred to he found that the ^{objects} ~~spots~~ were specks of dust blown which the wind was blowing about.

Mr. Miller also reported at length his observations of the sun

Since June 1st five groups of spots had appeared on the East limb and North. Previous to this ~~they~~ ^{the spots} had all

been seen. Some of these had been
around 3 or 4 times.

Mr Miller had made spectroscopic
observations of these spots; and
stated that in the region of the
photosphere surrounding one group
especially in one place somewhat
north of the chief spot, the C
line was considerably displaced
towards the more refrangible end of
the spectrum.

Interesting prominences were seen
on June 7th & 14th chiefly in the
Sun's N. Hemisphere.

The paper of the evening was one
on "Double Stars" prepared by
Mr Miller but the evening was so
far advanced that there was
merely time to introduce the subject
it being understood that the paper
in its entirety has still to be read.
The third part of Mr R. Redway's
historical sketch of Astronomy was
taken as read.

The meeting then adjourned till
June 20th at the office of D. G. S. Foster
Jones & Seward st^s

John W. Wray
Rec. Sec.

A. G. S. Foster

The regular meeting of the Astronomical & Physical Society was held at the office of Dr. G. S. Foster Yonge & Gerard St. June 30th 1891. The vice-president occupied the chair. The minutes of the previous meeting were read and confirmed.

The motion in reference to forming a section of the Society for constellation study &c and of which notice had been given was carried.

The motion in reference to considering the advisability of placing restrictions upon the routine work of the meetings was put and several members stated their views.

The majority were of the opinion that notwithstanding the importance of the papers of the evening contributed by members or others, the routine work such as correspondence, observations &c cannot be neglected. It was however stated, ^{and understood} that a member who should give his time and study to the preparation of a paper should have every opportunity to do it justice and the routine work could be at any time restricted in order to give the writer of the evening such opportunity.

The original motion as put was not carried.

Anon Jones was duly elected in active member

M^r Anson Jones was duly elected
an active member of this society.
and the following named gentlemen
nominated for active membership.

D^r Harriet W Smith L.C.

by Sir Adam Wilson and M^r A. Harvey.

J. F. Eby by M^r Heubner & M^r Lindsay

J. Goddard do do
Communications received by M^r Heubner
were read as follows:

From the Astronomer-Royal of England
consenting to forward the Greenwich publications
to the Society's agents in London who
will transmit them here.

From Miss Whitney of Poughkeepsie

From Prof Jatus of Germany

G. P. Swiss of N. Y.

J. W. Backhouse of England

The Librarian reported the receipt of
Eclipse report Jan 1 1889 from St. John's
Observatory.

Also pamphlets by Prof Buechard from
Lick Observatory.

M^r Miller urged the members to take
advantage of the library which is
being rapidly filled with valuable
works from the various scientific societies

in Europe and America.
Observations.

M^r Helmsley reported to the report of the bright points upon Saturn's ring which some members had observed, and stated that he had not been able to detect them in his 3 in telescope. Attention was called, however, to a sketch printed in the English Mechanic, in which these bright points were shown. In reporting his observations of the sun M^r Miller called attention to a very interesting prominence which he had measured and examined with the spectroscope.

The height was calculated to be 33000 miles and the evidence of the spectroscope showed that the whole column was in rapid rotation.

Several members had observed the surface of the sun recently, this being a period of great solar activity.

One member reported having observed the penumbra of the sun spots with a non-achromatic telescope. This he considered unusual with such a simple instrument. M^r Miller stated that any one using a non-achromatic upon the sun will have the best results by allowing the image of the sun to be thrown upon a screen at some little

distance from the instrument, the details of the spots can be seen better in this manner than by direct observation when the instrument is non-achromatic.

The meeting was then closed at the disposal of Dr S. B. Foster.

The Doctor gave a very interesting description of his electric apparatus. The large Wimshurst Static machine was not in working order by reason of the unfavourable atmospheric conditions.

The explanation of this was of scarcely less interest than the actual working of the machine would have been.

The application of Electricity to medical science was referred to on many points new to most of the members were explained. Some of the appliances were of Dr Foster's own invention.

In commenting upon Dr Foster's lecture the vice-president said that the society would gladly receive on elementary papers upon the subject of Electricity as there are many terms in use that are not very commonly understood. The Vice-president's remarks were intended as an invitation to any member who desired, to prepare such a paper.

After informally thanking Dr Foster for his lecture the meeting adjourned till

July 14th at the residence of Mr. Elvins.
A. Elvins.

Problems
 Michelson
 see next report

Toronto, 14th July 1891.

The undersigned begs to present the First Report of The Opera Glass Section of the Astronomical and Physical Society of Toronto.

Complying with the terms of the resolution adopted at the last meeting of the Society and with a view to the organization of the Section thereby permitted to be constituted, circulars, similar to that hereto attached, were issued for the purpose of calling a meeting of the members, to be held on the 6th instant on the outer balcony of the Pavilion in the Horticultural Gardens, the use of which had been granted.

Notwithstanding the short notice given, the attendance of members was very encouraging. The interest manifested in the proceedings was both general and animated. Mr Lumsden and the undersigned were elected to be the Chairman and the Secretary, respectively, of the section. It was agreed that the Section should meet on alternate Tuesdays at 20 o'clock, commencing with Tuesday the 21st instant, and that the first evening should be devoted to elementary instruction preparatory to the study of the Constellations.

The Gardens having been found to be centrally and conveniently situated, it was decided to request the Society to make to the Parks and Gardens Committee of the City Council, a formal application for the use by the Section during the Summer and Autumn months of the balcony when not otherwise occupied, All of which is respectfully submitted.

Laurence Bell

Secretary, The Opera Glass Section.

ASTRONOMICAL AND PHYSICAL SOCIETY OF TORONTO.

Toronto, 3rd July, 1891.

Dear Sir,-

With a view to complying with the terms of a resolution adopted by the Society on the 30th ultimo, a meeting of those of its members desiring to form an Opera Glass Section, mainly for the study of the Constellations, will be held at 20 O'clock, on Monday, July 8th, on the Balcony of the Pavilion, at the Horticultural Gardens, the requisite permission having been kindly granted.

The business to be brought before the meeting will consist of organizing the Section, including the election of a Chairman and of a Secretary, and the arrangement of details.

As it is desirable that the objects of the Society in authorizing the formation of the Section should, if possible, be effected under auspices of an encouraging character, your presence and active sympathy are requested.

Should the evening prove to be fair, some observations may be made. For this purpose, opera-glasses and portable telescopes may be brought.

Yours faithfully,

THOMAS LINDSAY,

Recording Secretary.

Esq.,_____
Toronto.

The regular meeting of the Astronomical & Physical Society of Toronto was held July 15th at the Residence of Mr A Elvins. The vice-president occupied the chair. The minutes of the previous meeting were read and upon correction were confirmed. The correction was the entering of the following motion:

Moved by Mr Dewar and Mr Pursey that a section of the society be formed for the study of Physics.

Some discussion arose in this matter. Mr Elvins pointed out difficulties in the way of forming sections at any time such as finding a time suitable to such members as would like to form a section.

Mr Harvey gave it as his opinion based upon experience, that the dividing of a society into sections does not usually strengthen it. Mr Dewar finally withdrew his motion but the vice-president stated that a paper on Physics need not intimately connected with astronomy would be received at any time from any member who might prepare such a paper.

Mr Clarence Bell who has been elected Secretary of the Opera Glass section presented the first report; and with a view to obtaining a permanent place for meeting the following resolutions

was carried upon motion of Sir Adam
Wilson and Mr Arthur Harvey
the motion

The following named gentlemen were
elected active members

Mr J. P. Ely 134 Bloor st

Mr J. Goshubter 85 Wellesley

It was moved by Sir Adam Wilson
seconded by Mr Harvey that
Harriet A Smith Esq R. C. D. C. be
elected a life-member of this
society. Carried

It was moved by Mr Miles seconded
by Mr Lawson that Sir Adam
Wilson be elected a life member
of this society. Carried.

The following named gentlemen were
nominated for active membership:

L. R. A. Sims Esq

Capt Bennett

S. Michael Esq

by Mr Newber

and Mr Lindsay

Moved by *Lie Adams Nelson*, and seconded by *W Arthur Hawley*

THAT the first Report of the Opera Glass Section be received and be adopted, and that, in compliance with the suggestion therein contained, the Secretary be authorized to apply to The Parks and Gardens Committee of the City Council for leave to hold upon the outer balcony of the pavilion in the Horticultural Gardens, when not otherwise in use, the open-air meetings of the Section on alternate Tuesdays during the summer and autumn months, and to express the hope of the Society that the requisite permission will be granted, inasmuch as the Section will not need either light or attendance, and will not suffer any abuse of the privilege if conceded.

Communications were received from
 " The Royal ^{Academy} Society of Belgium

The Royal astronomical Society of England
 The Directors of the Paris Observatory

The Observatory of Kiel Germany

M^r Kunsden stated that he had received
 Acknowledgments of receipt of annual report
 from the Public Library Toronto,
 & Public Library Hamilton.

It was noted also that the following
 journals had made reference to the report
 in their columns.

The English Mechanic; Canadian Illustrated,
 Trinity University Review; Catholic Weekly
 Review.

The Librarian reported the receipt of
 volumes of Transactions from Kiel
 Observatory

M^r Miller reported having made
 spectroscopic observations of the sun
 on July 12th and stated that the
 displacement of the C line in the
 region of the sun's surface just preceding
 the northern members of the sun spot
 group of July 8th gave evidence of very
 considerable motion in the line of sight.
 This observation was made at 9 hrs
 on July 12th and the shortening of the
 wave length indicated a motion of
 56 miles per second.

The phenomenon was only maintained
 for about 20 minutes but in many
 parts of the solar surface disturbance

of the hydrogen line was noticed. Mr. Lumsden called attention to several occultations which were to be observed during the next two weeks and gave the positions of some of the minor planets at the present time.

The favorable position of Jupiter was also noted.

A continuation of Mr. Ridgways paper was read; the chapter dealing with the progress of astronomy among the nations of the East and describing their means of measurement etc.

Mr. Lumsden read an extract from the Popular Science monthly

In the

In the discussion which followed Mr. Harney stated that there was in the possession of the Society an old astrolabe which had belonged to ~~Samuel~~ Champlain and which had undoubtedly been put to good use in measuring angles.

Mr. Lindsay was of the opinion that these instruments did better work than we usually give them credit for in these days of advancement.

The next meeting was arranged to be held at the residence of Mr. Pursey July 28th and the meeting adjourned

W. S. Harney
Rec Sec

The regular meeting of the Astronomical & Physical Society of Toronto was held at the residence of Mr G. G. Pursey 159 W. Canal July 28th. The President in the chair the minutes of the previous meeting were read and confirmed.

The following named gentlemen were duly elected active members of the Society

J. L. H. Smith Esq

Capt. Bennett

S. Michael Esq

all of Toronto.

Mr Harney ~~wrote~~ reported having attended a meeting of the Park & Gardens committee of the city council and stated that the requisite permission had been granted to the Opera Glass section to make use of the balcony of the Pavilion.

Mr Kinsler read a communication from the Customs Department in reference to the free entry of books for the Society. The Society was placed on the same footing in this matter as other similar institutions.

The Librarian reported the receipt of books from the Wick Observatory and from Trinity College Dublin; also a number of volumes which had been donated to the Society by one of its members. These were all works of value to the Society.

It was moved by Mr Lumsday and Mr Miller that the thanks of the Society be tendered to the unknown member who had made the donation this was carried and the thanks of the society thereby expressed.

Mr Pursey addressed the meeting on the subject of a permanent place of meeting and stated that Dr Foster had very kindly offered his rooms to the society. These were very centrally situated on the corner of John & Bernard st and quite a large meeting could be accommodated.

It was decided to hold a meeting of the council to consider this matter and report upon it.

A visit ^{from} of Mr J. B. Donaldson of The god was reported.

He and Mr Lumsday had called upon Mr Lumsday and spent a very pleasant evening in observing with Mr Lumsday's large reflector.

Attention was called to the august meteors the "Perseids" which ~~may~~ are due on the 9th 10th 11th of August. The paper of the evening was read by Mr Chasence Bell, a very interesting elementary paper on electricity. Mr Bell gave very clear definitions of some technical terms and explained some simple experiments.

Considerable discussion followed and a difference of opinion arose on one particular point which could not be settled unless by performing certain experiments.

M^r Bell was asked to continue his subject and consented to do so and kindly offered to bring his apparatus to the ~~next~~ ^{present} meeting.

This was arranged to be held on Aug 11 at the residence of M^r D. J. Howell and the meeting adjourned

A. Oliver.

The Sunday
Book

A meeting of the Council was held July 31st at the ~~existing~~ residence of M^r Lunden; the vice president in the chair.

The question of changing the place of meeting was discussed.

Dr Porter who was present very kindly made an offer to allow the society the use of his rooms at Yonge & Huron st for all the meetings if they desired.

Appreciating the kindness of the doctor the council decided to recommend to the society the following changes in the matter of meeting places.

The first meeting of each month to be held in the doctor's rooms.

The other meetings to be held at the various residences of the members as usual.

This to commence Sept 8.

A three months program was drawn up so far as hours are concerned and the members of the society are invited to furnish papers for the various evenings.

The question of publishing transactions was discussed.

Introductory to this, M. Howell presented his semi-annual statement of the finances of the Society.

The council recommended the acceptance of this statement as satisfactory and very encouraging.

In regard to publishing transactions it was considered advisable to ^{request} ~~press~~ upon the members who have read papers to prepare abstracts of the same, just as was done last year, and to do so as early as possible.

In reference to the publishing three changes were discussed.

First that if our funds do not allow us to print a very bulky volume, any member desiring more space than that allotted for his paper or papers may increase the space at his own expense.

secondly that the report be brought out on the first of the new year instead of after February

thirdly, that the report include such predictions of phenomena as will be of interest to amateurs throughout the country.

and in considering the above changes ~~it was decided~~ the society is requested to consider the advisability of changing the date of the Annual meeting to the first of the year.

after discussing these matters the Council adjourned

J. H. Ludray

Adopted accepting last
course

Charles F. Small

The regular meeting of the Astronomical & Physical Society, held at the residence of M^r D J Howell 218 Bleeker st Aug 11, the President in the chair.

The minutes of the previous meeting were read and confirmed.

The minutes of the meeting of the council were read. These were discussed and the following recommendations of the council were carried by the Society meeting unanimously.

The regular meetings of the Society will be held the first of each month at Dr Foster's rooms, the other meetings as usual; to commence Sept 8.

The treasurer's report showing actual cash on hand \$43.65; subscriptions due \$45.⁰⁰; balance Ladies' donation on hand and yet to be paid for books \$8.32.

The annual report to be brought out at the first of the new year;

members to have the liberty of increasing the space allotted to their papers at their own expense, subject to the approval of the reading committee.

The clause in reference to changing the date of annual meeting was discussed but as it involved a change in the constitution the question was laid over for a future meeting.

M^r R. O. Montgomery 519, Parliament St
was nominated for active membership
by M^r Pusey & M^r Lewis.

Communications were read from
M^r J. E. Sorel F.R.S. and from S^r Donaldson
of Angus.

The latter sent a list of double
stars some very difficult which
he had observed in his 5 1/2 inch,
refractor; and also a record of obser-
vations of Jupiter.

A letter was also read from
M^r Harvey describing a meteor
which he had observed at Ottawa
July 31st and remarking upon the
probable cause of the phenomena
displayed by it.

The president here gave a description
of a remarkable meteor observed by
him in July 1884 and explained
the physical cause of the bursting and
glowing of a meteor as he had originally
published it in Nature some years
ago.

M^r Howell & M^r Lewis reported
their observations of the "Perseids" on
the 9th & 10th of August.

[During the discussion which followed
the reading of M^r Donaldson's letter
M^r Lewis remarked that there was
a difference between English & American
authorities in some star names. He

instanced Scorpio, which in the American Ephemeris is Scorpius, while in ~~both~~, the genitive case is Scorpii.

The members present had studied the stars at the expense of their Latin but were of the opinion that if the nominative is Scorpio the genitive must be Scorpius. As no one would swear to the nominative a member appointed himself a committee to look the matter up thoroughly.]

The Librarian reported having received the monthly notices of the R. H. S. for June and also reprints of Mr. Lewis's papers.

Mr. Miller drew attention to some spectroscopic observations made on Aug 2.

At 7 A.M. while the spectrum of a small spot was being studied the displacement of the lines indicated an uprush of glowing hydrogen over a large area just south of the spot. The C line was so greatly distorted as at times to appear as a dark blotch projected on the continuous spectrum; bright lines were visible at the same time.

Mr. Carpenter commenting upon the phenomenon of the ^{bright} dark blotch stated that he had probably been the first observer who had ever noticed that, though it was seen by two others about the same time.

Continuing Mr Miller gave, on his opinion, the upward velocity of the fast streams not less than 200 miles per second;

^{and}
 Aug 2nd Micrometric measures of a large spot were Penumbra 25600 miles by 14600 umbra 14100 by 5900.

Mr Bell made some further remarks upon electricity but had not been able to bring his apparatus. The evening moreover was not favourable to experimenting

after an interesting discussion of the subject the meeting adjourned to Aug 25 at the residence of Mr G. B. Abney
 25 Adams Field no.

Wm Laiday

A. Stevens

The regular meeting of the Astronomical & Physical Society was held Aug. 25 at the residence of Mr. G. Aubrey 23 Beacons Field Ave. The vice-president in the chair. The minutes of the previous meeting were read and confirmed.

Mr. R. O. Montgomery was duly elected an active member of the society.

Mr. R. P. Hall 399 Spadina Ave. was nominated for active membership by Mr. Pursey and Mr. Lindsay.

A communication was read from the director of Berlin University.

Mr. Miller had received a letter from Mr. Shearman of Brantford asking if some time should be given in reading observations.

The librarian reported having received a volume from Georgetown Observatory descriptive of the new invention for recording star transits by photography.

Mr. Miller reported observations of the phenomena of transits of satellites across Jupiter's disc; the time was accurately noted and found to agree with the Ephemeris prediction.

Mr. Aubrey who had kindly brought out several of his surveying instruments, placed some of them in position out doors for actual work and gave practical illustrations of their use.

Mr. Abney's description of the instruments and work required of them was particularly interesting and instructive.

After the members had been some time thus employed, Mr. Abney requested them to remain for refreshment, after which the meeting adjourned till Sept 8 at Dr. Foster's rooms York & Second st

Geo Lindzey

W. G. Wood

The regular meeting of the astronomical & Physical Society held at the residence office of Dr Foster Yonge & Bernard st Sept 8th the vice-president in the chair.

The minutes of the previous meeting were read and confirmed.

Mr R. P. Hall of Toronto was duly elected an active member.

Letters were read: from Mr Shearman in reference to a telescope a 7 in reflector which is for private sale in Rochester price asked \$75⁰⁰.

From J. Donaldson referring to observations of the sun recently.

From Tharact Smith, whose absence had prevented his attending the meetings. Dr Smith had been on the Pacific Coast and had just returned.

Mr Pursey addressed the meeting on the subject of a public meeting with exhibition of the society's lantern slides. Some discussion followed favourable to Mr Pursey's suggestions which were put in form of a motion seconded by Mr Ross that Messrs Pursey Ross and Howell be appointed a committee to consider the best method of arranging a public meeting which might awaken some interest in astronomical matters among those who are not connected with the society. This was carried.

M^r Miller described generally the recent changes in the solar surface but had not had sufficient leisure to examine with the spectroscope.

M^r Lindsay referring to observations of the moon suggested that it would be a very good method of becoming acquainted with its surface to sit at the telescope with paper and pencil and sketch the features night after night as they came into view, and then to refer to a work on the moon for the names given to these features on the moon's surface.

M^r Elvins reported having observed Wafer's comet as a small diffused nebulous mass on the night of Sept 4 near δ Aeyone in the Pleiades. He said it would pass very close to Aldebaran. The paper of the evening was then read by M^r Elvins, on the cause of Gravity various theories were reviewed; particularly those of Le Sage and our own corresponding member M^r Kedzie of Chicago.

M^r Elvins discarded the common idea of attraction between two bodies being the cause of gravitation and considered that the force was a pressure from behind. He thought that M^r Kedzie's theory accounted for the observed facts better than any other.

Considerable discussion followed:

Mr Lindsay thought that there was an obstacle in the way of accounting for gravitation, in this: that the law of the inverse square must be demonstrated to result from it and he thought the labour in this was simply superhuman, not so easy as it looks, in fact simply superhuman.

Mr Livingston agreed with Mr Elvin on most points but was of the opinion that there is something wanting outside the physical world to account for gravitation.

As a usual result of the vice President's papers the discussion might have lasted till midnight but the meeting adjourned at 10. to meet at the Observatory Sep 22nd

A Elvin

Mr Lindsay
see see

The regular meeting of the
 411 Astronomical & Physical Society held
 Apr 22^d at the Observatory Queen's Park, the
 vice president in the chair.

Minutes of the previous meeting were
 read and confirmed.

M^r S E Peal of Sibragur Asam India was
 nominated as a corresponding member
 of the Society by M^r Elvins and M^r Miller.
 A letter to M^r Elvins from M^r Peal was
 read, the writer mentioning having sent
 a copy of a work upon the lunar surface;
 this however had not yet been received.

M^r Lumsden had been informed of
 the existence of a kindred society in
 Rochester N.Y. and was requested to
 open a correspondence with that association.
 Several reports of observations were received.
 The movements of Jupiter's satellites had
 been of most interest and the phenomena
 as predicted had been in several cases
 observed. M^r Lumsden reported having
 seen a double shadow of Satellite I on
 the evening of the 20th, an unusual phenomenon
 but seen occasionally.

M^r Donaldson had written detailed
 descriptions of several observations, extracts
 of which were read.

The auroral displays had been noticed
 by several and were discussed.

M^r Miller stated that the display seen
 by him did not show

the aurora spectrum. Referring to the height of the streamer he suggested sextant observations by two observers simultaneously, as a means of obtaining data & determine this.

Mr. Caspary arriving at nine o'clock the paper for the evening was laid over and the members at the president's invitation adjourned to the home of the observatory.

The large telescope was placed at their service and the remainder of the evening was spent in observing Jupiter, a satellite and shadow being upon the disc at the time.

An hour was very profitably passed in this manner. The definition with a power of 240 was very good and served to give an excellent illustration of the capabilities of the instrument.

Some predictions of phenomena were referred to, in the system of Jupiter, and members were requested to endeavor to observe them.

The meeting ^{then} adjourned till next at Dr. Foster's office.

Edw. Lindsay

Charles Caspary

The regular meeting of the Astronomical & Physical Society was held at the office of S. Foster, Yonge & Beuard St Oct 6th 1891. The president in the chair the minutes of the previous meeting were read and upon a correction being made were confirmed.

M^r S. E. Peal of India was elected a corresponding member of the society.

M^r Newden introduced the question of offering honorary membership to several gentlemen well known in the world of Astronomical science and was instructed to communicate with these gentlemen and also with others of distinction who might become corresponding members. The Librarian reported having received ~~several~~ several papers on variable stars from M^r Sore, also a volume of Royal Society's reports which had reached him only after considerable delay. The question of renting a box in the P.O. was discussed and so that these delays would not occur and that the P.O. authorities might know at once how to dispose of mail matter for the society. M^r ~~Newden~~ ^{Newden} undertook to make enquiries about cost of that. A communication from Sir R. S. Ball was read acknowledging the receipt of papers on meteors, which the recording secty had mailed to him, by M^r Harvey and M^r Donaldson.

Mr Howell gave a description of a brilliant meteor seen by him on Oct. 1 at 6.20, colour bright yellow tinged with green. Also reported a visit to Rochester N.Y. where he had spent some time through the kindness of Prof Swift, at the Warner Observatory. The director sent several volumes additions to the Society's library.

Mr Miller reported having observed brilliant prominences on the sun on Sept 27 at 9.30 and remarked that the position angles were exactly the same as observed just 14 days earlier.

Attention was called by Mr Miller to the revival of activity in the southern hemisphere of the sun.

A report of an observation of the transit of Jupiter's 3rd satellite was read in a letter from Mr Donaldson of Peper. Mr Woodward and others had observed this also.

The reading Secty. addressed the meeting on a matter of very pressing new business. Dr Barrett of Smith 2-6 a life member of the Society, had frequently expressed his hearty sympathy with the Society in its work and had very kindly placed at its service an excellent 3 inch telescope admirably mounted.

This telescope had been brought to Dr Porter's office and will be under his charge. Some little defect in the rack and pinion had been put right by Mr Porter's opinion of King who had very kindly made the society a present of his labor. The instrument was pronounced by him to be first class and just work is expected of it. During the week previous Dr Porter had been ^{examining} the surface of the sun and had made several sketches of sun spots. On ^a Tuesday reported, in the absence of Dr Smith, an observation of the transit of Jupiter's 3rd satellite observed by the doctor on the evening of Sept 24th. This was the first work of the instrument in its new career, that being the night when it was taken away from Dr Smith's residence.

It was further stated, that this instrument had a certain historical interest as it had once belonged to the late J. G. Howard of High Road and it was a bequest from him to Dr Harriet Smith.

Appreciating the kindness shown to the society it was moved by Dr Adam Wilson and Mr Lindsay that a vote of thanks be tendered to Dr Smith for this substantial mark of his sympathy with the society.

This was unanimously and amidst
 applause, carried, and the thanks
 of the society thereby expressed.
 The reading society referred to the press
 report of the society's meetings and
 stated that it had been thought desirable
 to change the date of their appearance to
 the Saturday following, as more time
 would be had for writing it up and
 some predictions of phenomena could be
 put in.

Mr. Remondin handed in a list of
 several phenomena to be inserted
 in the press report and it was hoped
 observers generally would do their
 best to report success.

Mr. Hindray referred to the receipts of
 the month, total, a sum of 15 and
 presented a diagram illustrating
 the path through the school.

The meeting then adjourned till
 Oct 20th at the residence of Mr Adam
 Wilson.

After adjournment, the members repaired
 to a hall adjoining Mr. S. Parker's office
 and were entertained by him with some
 experiments in hypnotism.

Mr Hindray
 Secy.

In attendance
 M. P. Wesley referred to the ~~matter~~ ^{question}
 of insuring the telescope in its new
 quarters and it was agreed that the
 cost of insurance should be a charge upon
 the society's funds

A. Stevens.

the Sunday

Reel 54

The regular meeting of the astronomical & Physical Society was held at the residence of Sir Adam Wilson Spanish Cres. Oct 20th 1891,

The vice president Mr. A. Elvins occupied the chair.

The minutes of the previous meeting were read and confirmed.

The corresponding secretary referred to the question of the proper delivery of mail matter for the society and stated that it had been made apparent to him that the renting of a box in the Post office would not be any better so far as the society is concerned than the present system of delivery.

He also reported having received a reply from Prof Simon Newcomb, to a letter written him in which he was asked whether he would accept honorary membership in the society. Prof Newcomb wrote in very kind terms that he would be much pleased to have that honour conferred upon him.

The British Astronom. Assoc. had also written to the corresponding secretary, to the effect that this society would be placed upon the exchange list.

The librarian reported a volume received from the Astronom. Society of the Pacific Coast. Mr. Elvins referred to the importation of apparatus for spectroscopic work by

Mess Michael Bros of Toronto and recommended that members desiring to purchase such should see them.

Observations.

Dr Hooker reported work on the solar surface but had not made ^{any} sketches. Mr Miller called attention to the activity in the northern hemisphere of the sun.

Mr Ridout referred to the interesting observations that may be now made of Jupiter's system.

Dr Smith referring to the phenomenon of the red spot of Jupiter was desirous of learning the cause of its appearance.

Mr. Clark stated that the cause had not been clearly stated by any writer on the subject, conjectures only had been made but he gave an interesting account of its appearance in the telescope.

Mr. Lumsden reported having observed Saturn in all its beauty minus the rings and remarked that there was but little time to witness this phenomenon of the ringless Saturn as the 30th of Dec was the date of the re-appearance.

He also gave a very interesting description of Wolf's comet as seen in his 10^{1/2} inch reflector.

Mr Lumsden also handed to the recording secretary several predictions of phenomena to be included in the press report.

Mr Lindsay read a paper on Illustrations of Parallax introducing a simply constructed model of the star space designed principally to show the displacement of the moon in R. A. when off the meridian. He remarked that when the corrections for parallax are understood and properly applied much of the difficulty in projecting eclipses and occultations is removed. As a practical example he presented a paper which was taken as read on the solar eclipse of Oct 20 1892, containing the calculations in detail for computation by Prof Loomis' graphic method.

Mr ~~Lindsay~~ ^{Tinsdale} exhibited an apparatus styled the "Seasonal Season" merely designed to illustrate after a new design the orbital and axial motions of the Earth.

Among several new features were the introduction of a mechanical representation of the radius vector of the orbit and a rod to represent the rays of light proceeding from the sun.

The apparatus was much admired and Mr Tinsdale had the good wishes of the members for the success of the apparatus commercially.

The meeting then adjourned to
Nov 3rd at 5 o'clock
A. Glavin

The Sunday

The regular meeting of the Astronomical and Physical Society was held in the Library of Association Hall Nov 3 1891.

The vice-president Mr A Elvins occupied the chair.

The minutes of the previous meeting were read and confirmed.

Election of members:

Upon motion of Sir Adam Wilson seconded by Dr Harriet W Smith 26 it was resolved:

That Prof Simon Newcomb L.L.D. Superintendent of the American Nautical Almanac, and Prof E. S. Holden Director of the Lick Observatory be elected honorary members of this society.

Carried.

Upon motion of Mr A Harvey seconded by Mr G. G. Pusey it was resolved:

That Mrs R. A. Proctor be elected a corresponding member of this society.

In moving this resolution Mr Harvey paid a high tribute to the memory of the late Mrs R. A. Proctor who had done so much to make science popular in every sense, and voiced the feeling of the members by saying that this society was much honoured in having Mrs Proctor's consent to her name being thus brought forward.

The Opera Glass Section

-0-

The Opera Glass Section begs to present this its second Report :-

A meeting of the Section was held on Tuesday Evening last for the purpose of taking into consideration its future and the method upon which it should conduct its work during the Winter Season.

A memorandum on the subject was read by Mr Lumsden, the Director, Discussion having taken place it was decided to discontinue for the winter months the regular fortnightly meetings and in their stead to substitute meetings to be held indoors at the houses of members of the Section or elsewhere at the call of the Director.

The plan of work is to be somewhat as follows:-

Subjects suitable to the season are to be selected and from time to time to be announced at the regular meetings of the Society. The whole Section will be asked to study each of these subjects and certain members will be appointed to prepare and read condensed papers; general discussion to follow. If a selected subject be one requiring outdoor work with the Opera Glass or telescope and the evening of meeting be not suitable for observation, another evening is to be appointed and announced.

Although somewhat interefered with by the absence of members during the summer holidays the work of the Section, which began in July last, was accepted as fairly satisfactory. The prospects were regarded as promising and an effort will be made to enlist the active sympathy and individual co-operation of the members.

A suggestion was made with respect to changing the name of the Section.

It was explained that one of the objects expected to be attained by so naming it ,was, to create in the minds of persons outside of the Society, and still interested in the study of Astronomy, the impression that much most instructive work can be done with good opera-glasses, it being a mistake to assume , as some do, that the study of the sun, moon, planets and stars, is reserved for those who possess expensive telescopes and accessories.

It was stated that, so far as is known, the Section is the only one of the kind in existence, and, for that reason it would be all the more creditable to the Society to make it a success, to do which seemed to be the intention of members.

All of which is respectfully submitted

Larence Bell
Secretary

Toronto, 3rd November 1891.

The motion was carried amidst applause, and Mr Proctor declared duly elected a corresponding member of this society. Upon motion of Mr J. G. Ross seconded by Mr J. D. Ridout it was resolved that Mr S. W. Burnhard of the Lick Observatory staff be elected a corresponding member of this society.

In moving this resolution Mr Ross remarked upon the bond of union that exists among people of all nations who are striving after truth in science.

The society had now upon its roll of membership names that belonged to the far East and the far West and was to be congratulated upon its being thus represented among lovers of science in distant parts of the globe.

The resolution was carried amidst a hearty appreciation of Mr Ross' remarks.

The vice-president then introduced to the society, Mr R. A. Proctor who was present at the meeting, being in Toronto for the purpose of delivering a course of lectures on astronomy.

Mr Proctor asking to be excused from a lengthy address, still favoured the meeting with some very interesting remarks upon some photopaper of the sidereal heavens which were handed round among the members for inspection.

It was noticed particularly that a recently

* Revisé about. Miss S. L. Taylor was nominated for active membership by Mr Elmit and Mr Lindsay

taken photographs of the Milky way showing a distribution of stars such as the late Mr Proctor had suggested would surely be found to exist.

Mr Proctor expressed her pleasure at being enrolled a member of the Society estimating it an honour to be such, and was received in a manner which expressed the appreciation among the members of the honour conferred upon them.

Observations.

The weather had not been very favourable for observing and nothing of much importance had been done during the past two weeks.

Mr Lindsay decided to record an observation of the ringed Saturn last 25th morning, with aperture 2 1/2 inch power about 60.

Mr Blaine Bell secretary of the Opera Glass section presented the second report of the section.

Mr Arthur Harvey read a most interesting paper on the "astrolabe" referring to the use of the instrument in early times and describing particularly one of these instruments which it is in possession of Mr Cassels of Rosedale and which originally belonged to Champlain.

An engraving of the instrument was handed round for inspection among the members.

Lecture from the vice-rector
 of Cape of Good Hope Observatory observed a meteor of peculiar colour
 from Mr Buchanan Mr. Bredin on Oct 25th. That colour he believed to
 be very unusual.

Mr. Harvey's paper was handed to the editing committee and will form an interesting chapter in the Society's annual report.

Mr. G. F. Lumsden read a paper on the "Face of the sky for November". This essay was written in Mr. Lumsden's usual ~~descriptive~~ ^{entertaining} style, describing the heavens as they now appear and will appear throughout November.

The stars which we have just lost sight of for convenient observation were referred to and also those which are ~~beginning~~ ^{becoming} visible.

Mr. Lumsden dealt at some length upon the peculiarities of the remarkable star "Arcturus" giving the authorities from which the facts concerning the star were taken.

The meeting heartily & thoroughly appreciated the writer's efforts to prepare a popular essay on a most interesting subject.

The vice-president in his concluding remarks referred to the advancement of science and to the continuation of astronomers' life work by those left behind, instancing the work of the widow of the late Dr. Henry Daper in spectroscopic observations of the stars, and of Mr. Proctor in continuing the popularizing of astronomical science.

A copy of the paper was read by Mr. McLean.

The meeting then adjourned to meet
at the call of the Secretary.

After adjournment several copies
of the Constitution and bylaws were
distributed and several new members
among them Mr Proctor signed the
roll of membership

John Lindrup
Rec Sec

Livett Smith
Chairman

The regular meeting of the Astronomical & Physical Society was held Nov 12 in Dr Roberts rooms. The chair was occupied by Dr Lanard W Smith 26.

The minutes of the previous meeting were read and confirmed.

Miss S L Gaylor of Toronto was elected an active member of the Society. Upon motion of Sir Adam Wilson seconded by Mr A F Miller it was resolved, that Mr W H Denning of Bristol England be elected a corresponding member of the Society. Carried.

In moving this resolution Sir Adam Wilson made some remarks, appropriate to the occasion of the election of such a distinguished ^{astronomer} ~~man~~ as member of this Society and, referring to the election of Prof Simon Newcomb and Prof Holden at the previous meeting, decided to supplement his ~~motion~~ resolution of that evening by calling attention to the positions these gentlemen hold and the honor done to the Society by them in becoming connected with it.

On motion of Mr A Elms seconded by Sir Adam Wilson it was resolved that Mr Huggins President of the British Association be elected honorary member of this Society. Carried.

Mr Elms in moving this resolution

stated that he was proud to have the
honour of bringing Dr Huggins name that
before the society and referred briefly to
the great work done by the great spectroscopist.
On motion of Mr Hewden seconded by
Mr Ridout it was resolved that
Mr J E Gore of Ballinacree Island
be elected a corresponding member
of this society. Carried
Mr Hewden read a communication from
Mr Love and presented a paper on
the Pleiades contributed by him.
Letters were also read from
Dr Huggins
Mr Denning
director of Greenwich observatory
Harris.

and from Dr Lindford Fleming who ^{had} ~~was~~
the society would, take the first step
towards instituting a change in the
mode of reckoning astronomical time,
that is to say, in adopting midnight
instead of noon as the commencement
of the astronomical day.
The paper contributed by Mr Gore was
read by the ~~secretary~~ ^{secretary}. The
~~note~~. It elicited many complimentary
remarks from ^{many} ~~several~~ of the members
and a picture of the group from Mr
Proctor's collection being thrown upon

the recent Mr. Lewis' description was
understood intelligible in the most satis-
factory degree.

The chairman then introduced Mr.
Proctor who ~~entertained~~ had very kindly
brought a large number of views of
Lick Observatory, and its surroundings
These were exhibited by Mr. Howell and
served to illustrate a most instructive
and entertaining "talk" by Mr. Proctor
A vote of thanks was heartily accorded
Mr. Proctor and one of the most
pleasant meetings of the society brought
to a close.

The next meeting was arranged for Dec^r
at Dr. Roberts' office.

His kind regards
R. S. S.

Minutes approved & adopted
Attest
Geo. C. ...

Council

A meeting of the council was held
Nov 23rd

The question of the Society's financial standing was discussed and the treasurer's statement received.

The cash on hand was ~~\$51.97~~ \$51.97 and the subscriptions due from recently elected members will increase this amount to a sum amply sufficient for the publication of the annual report and sundry small incidental expenses. x

Mr Miller moved, seconded by Mr Lindsay that certain expenses in connection with Mr Proctor's visit, which had been incurred by individual members, shall be a charge upon the Society's funds and that the treasurer be instructed to pay the same.

The council recommends that this resolution be adopted by the Society. x

The details of the annual report were then discussed and a portion of it read over. Some of the members not having yet handed in their papers in form for publication, it was hoped this would be done at once that the printing might not be delayed.

Wm Lindsay
Rec Sec

approved & adopted

Adrian Nelson
Gen Sec

The Astronomical and Physical Society

OF TORONTO

CHAS. CARPMAEL, M.A., F.R.S.C., F.R.A.S.
DIRECTOR TORONTO OBSERVATORY
PRESIDENT
A. ELVINE VICE-PRESIDENT
D. J. HOWELL TREASURER
G. E. LUMSDEN COR.-SECRETARY
THOS. LINDSAY REG.-SECRETARY
A. F. MILLER LIBRARIAN

(INCORPORATED 1890)

Toronto, Nov 23rd 1891
CANADA

Statement of Treasurer

| | |
|---|--------|
| Cash on hand | 51.97. |
| (including \$8 ³⁷ / ₁₀₀ of Goldie Fund) | |
| Membership Fees due | |
| One Life Member. | 20.00 |
| Active Members @ 2 ⁰⁰ | |

Total

H. J. Howell
Treasurer

The regular meeting of the astronomical & Physical Society was held in Dr Porter's office Dec 2nd. The Hon Sir Adam Wilson in the chair.

The minutes of the previous meeting were read and confirmed.

Communications were read from Miss Agnes M. Clarke of London Eng and Mr H. M. Christie F.R.A.S. astronomer Royal of England.

It was moved by Mr A. Harvey seconded by Dr Porter that Mr Christie be elected an Honorary member of this Society. Carried.

It was moved by Mr H. A. Miller and Mr John A. Paterson that Miss Clarke be elected a corresponding member.

Mr Miller and Mr Paterson each paid a high tribute to the distinguished lady who had honoured the Society by consenting to become connected with it.

Sir Adam Wilson referred to the high rank taken by ladies at the great centres of Education and was of the opinion that the feminine mind is capable of reaching to the greatest height in Science.

Mr W. A. Mitchell of Toronto was nominated for active membership by Mr Lindsay and Mr Henderson on motion of Mr Lindsay seconded by Dr Porter Mr W. A. Mitchell was declared elected an active member of this Society.

Mr J. M. Clark M.A. of Toronto was nominated for active membership by Mr Henderson and Mr Miller.

Mason

It was moved by Mr Lewden seconded by Mr Bell that the 3rd report of the Apua glass section presented at a previous meeting be adopted carried.

Among the observations reported was a report of the eclipse of April 25 seen by Mr Lewden without any optical aid.

The paper of the evening was read by Mr Arthur Harvey on Photo-chromy.

The wave theories of sound and of light were discussed exhaustively and their connection explained, by reference to familiar illustrations.

Mr Harvey desired to introduce the subject of Photo-chromy, as the fact of being able to photograph in colours was an absolute proof of the undulatory theory of light.

The details of Prof Lepmann's process were explained and described, and a negative if such it could be turned of the spectrum was shown to the members. This had been given to Mr Harvey by the special favour of Prof Lepmann and is the only one in the country at present.

The efforts to project the image on the screen was not entirely successful, the lantern not being properly adapted for the purpose. Mr Harvey stated that he would at an early date give a practical illustration of the method of photographing in colours.

NOTICE OF MOTION.

Mr. Lumsden gives notice that at the next meeting of this Society he will move:--

I. ~~That the name of the Society be changed to that of THE TORONTO~~
~~ASTRONOMICAL SOCIETY.~~

II. That the annual meetings of the Society be held on the second Tuesday of the month of January in each year.

III. That the annual fee be \$, payable according to a fixed proportion in cases where active members are elected subsequent to the date upon which the annual meeting for the year was held.

IV. That the Council of the Society be composed of the officers and one or more of the active members, elected by the Society, and one or more members of Sections, respectively.

V. That provision be made for the election of additional officers, honorary, or otherwise, and

VI. That the Constitution be amended accordingly.

[Some discussion followed ^{the} result of which was the bringing out of the statement that photostaking in colonies was of no manner of use to anybody or for anything, that even if it be quite successful its results will lie rather in the line of what are known as scientific toys than in the line of the arts and sciences.]

The next meeting was arranged for Dec 16th at the residence of Mr D G Ross in Trakella St Enniscorthy - [read after introduction]

~~meeting~~ The minutes of the council meeting of Nov 23 were read, and the following recommendation of the council confirmed and adopted.

That the treasurer be instructed to pay certain expenses in connection with Mr Pector's visit, and which had been incurred by individual members.

Mr Sugriven gave notice that at the ~~next~~ next regular meeting he would ~~propose~~ move the following changes in the constitution.

A. B. Wick

Mr Sugriven
Dec 16

Council meeting
 Dec 11th
 Recommendation 300 copies 96 pp
 95[¢]

At the council meeting
 held Dec 11 it was
 recommended that there
 be ordered

300 copies transactions
 of a cost of
 7 96 pp.
 95[¢]

Thursday
 Keese

The regular meeting of the
 astronomical & Physical Society
 held at the residence of Mr J. G.
 Ross 44 Isabella St Dec 15th 1891
 The vice-president in the chair.

The minutes of the previous meeting were
 read and confirmed and the minutes of
 the council meeting Dec 11 were read.

Mr J. M. Clarke M.A. of Toronto was elected
 an active member

Mr J. W. Howe of Toronto &
 Mr J. M. Hirsch do were nominated
 for active membership by Mr
 Henebrier and Mr Lindsay.

These gentlemen were to have been
 nominated at a previous meeting.
 The rule was therefore suspended
 and they were declared duly elected
 active members

A letter was read from Mr Carpman who
 was ~~present~~ ^{unable to be} present. He
 enclosed a card from the secretary of
 the Canadian Institute in reference to
 the Mitchell method of determining
 stellar occultations. ~~that method~~
~~the members being not familiar with this method~~
~~being met & all present~~ The corresponding
 secretary was requested to make enquiries
 and report on the advisability of publishing
 it in the society's transactions.

Mr Henebrier reported the progress of the
 Committee appointed for the purpose

of arranging a public meeting and read several letters in reply to his enquiries about lantern slides &c. Some of these ^{slides} were rather costly and it was the feeling of the members present that ^{as Mr Howell had} made reproductions from published photographs very successfully. They had perfect confidence in his ability to do so again with the object in view of preparing slides for a public exhibition. Mr Howell very kindly undertook to prepare some slides in the interests of the society and not as a matter of business just the same than the actual cost of material.

The matter was therefore left in Mr Howell's hands and the society's appreciation of his efforts to advance its interests thereby recorded.

The thanks of the society were due also to Mr Rangard, editor of Knowledge who in writing to Mr Howell gave liberty to reproduce anything found in ^{the} pages of his journal.

The librarian reported the receipt of a volume of reports from the Carleton College observatory and of a volume on the "Adjustment and Testing of Telescopes" from Mr J. Donaldson of Angus.

Mr Howden reported at length his observations of Jupiter on the evening of Dec 12 and a letter

1

Moved by Mr. Lumsden, seconded by Mr. Elvins, and Resolved that the annual meetings of this Society shall be held on the second Tuesday in the month of January in each and every year, and that Section 9 of Article III of the Society's Constitution be and the same is hereby amended accordingly.

Carried

was read from Mr. Donaldson of Angus who had been observing at the same time.

Both observers had noticed peculiarities in the colour of the satellites.

Mr. Donaldson's letter was subsequently handed to Mr. Lumsden who will prepare a short paper on the matter for the annual report.

There were several items of new business to bring before the meeting. The motions, of which notice had been given, were taken up:

The proposal to change the name of the Society was withdrawn. The reputation of the Society having been built up under its present name it was thought best to keep it.

It was then moved by Mr. Lumsden seconded by Mr. Elvins that the Annual meetings of this Society shall be held on the second Tuesday in the month of January in each and every year and that section 9 of article 3 of the Society's constitution be amended accordingly.

Carried

✓ It was moved by Mr Lumsden
 seconded by Mr Miller that
 the Executive officers of this society
 shall consist of

President

Two vice-presidents,

Treasurer

Corresponding Secretary

Recording Secretary

Librarian

and that ~~the~~ ^{the} honorary office
 of ~~Patron~~ ^{President} be created ^{and} ^{that}
 that Section 1 of Article 3 of the
 Society's constitution be amended
 to take effect on the first of
 January next. Carried

It was moved by Mr Lumsden
 seconded by Mr Lindsay
 that the Council of this
 Society shall consist of the
 Executive Officers.

Five active members to be
 elected.

Two representatives from
 each ~~section~~ ^{district}

the ~~Patron~~ ^{President} for the time being
 to be a member of Council
 ex officio, and six members
 to form a majority, and that
 Section 1 of Article 3 of the consti-
 tution be amended accordingly to
 take effect Jan 1st Carried

2

Moved by Mr. Lumsden, seconded by Mr. Miller, and Resolved that the Executive Officers of this Society shall consist of a President, two Vice-Presidents, a Treasurer, a Corresponding Secretary, a Recording Secretary and a Librarian, and that the honorary office of Patron be created, and that Section 1 of Article III of the Society's Constitution be and the same is hereby amended, to take effect on the first day of January next.

active
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not be
then a
accord

Carried

5

3

Moved by Mr. Lumsden, seconded by Mr. Lindsay, and Resolved that the Council of this Society shall consist of the Executive Officers and of five active members to be elected by the Society, together with two representatives to be chosen by each Section, the Patron for the time being to be a member of Council ex officio, and six members to form a quorum, and that Section 1 of Article III of the Constitution be and the same is hereby amended accordingly, to take effect on the first day of January next.

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Carried

Moved by Mr. Lumsden, seconded by Mr. Howell, and Resolved ~~that~~ that the active membership fee shall be two dollars for each calendar year, save in the case of active members elected on or after the first day of October ~~who shall~~ *whose fee shall cover the full calendar year* not be required to pay more than one dollar for the remaining portion of the year ~~the year~~ *the year* ~~current~~ *will as the usual* and that Section 9 of Article II be and the same is hereby amended accordingly, to take effect on the first day of January next.

Carried

5

Moved by Mr. ~~Howell~~ *Howell* and seconded by Mr. Miller ~~that~~ that at the meeting previous to the annual election of officers, nominations be made for the various positions on the Council, and that members proposed on that occasion for office ~~unwilling to serve shall~~ *decline nomination* in default of which it shall be taken for granted that they are willing to serve if elected, *united*

- 4 It was moved by Mr. Hummel
 seconded by Mr. Howell
 that the active membership fee
 shall be two dollars for each
 calendar year done in the
 case of active members elected
 on or after the first of October
 whose fee shall cover the
 remainder of the year as well
 as the ensuing year
 and that section 9 of article 2
 be amended accordingly &
 take effect Jan 1st
 carried
- 5 It was moved by Mr. Howell
 seconded by Mr. Miller that
 at the meeting previous to
 the annual meeting selection of
 officers, nominations, be made
 for the various positions on the
 Council and that members proposed
 on that occasion ~~shall then decline~~
 and unwilling to serve shall
 then decline nomination in default
 of which it shall be taken for
 granted that they are willing
 to serve if elected.
 carried.

Mr Howell then addressed the meeting on the subject of finance it being a most unfortunate fact that the sublime science of astronomy cannot be studied without an occasional appeal to the root of all evil.

Mr Howell stated that the funds in his hands and the membership fees due and which are readily available were sufficient to warrant the placing with the printer the order to proceed with the printing of the annual transactions.

It was therefore unanimously agreed that the recommendation of the council be adopted and that the society issue

300 copies of transactions of
96 pages at a cost of
\$95⁰⁰

carried

Mr Miller desired to call attention to the fact that certain funds in the treasury of the society, ^{namely contributions} should be considered as capital and not money to be expended like the ordinary membership fees, and thought that if these funds are used now the society should consider that it has borrowed a sum to be repaid.

The paper of the evening was one
 of on "Solar Heat" contributed
 by S. Morrison of Washington D.C.
 corresponding member of the
 Society.

The author reviewed the nebular
 Hypothesis and discussed the
 claim of the contraction theory
 and the meteoric theory of the
 origin of the sun's heat.

Each statement was subjected
 to a rigorous mathematical
 analysis and the result of the
 distinguished writer's investigations
 were that the solar heat is generated
 by the contraction of its globe
 and not by the incensing of
 meteoric matter.

The paper was considered one of the
 greatest value and will be
 published in full.

The next meeting was arranged to
 be held at the residence of
 Mr. J. Goddard at 85 W. 11th St.
 Dec 29th

Wm. L. Friday
 Recd.

Arthur Harnum
 Chairman.

The regular meeting of the
Astronomical & Physical Society
held ^{Dec 29/91} at the residence of Mr
J. Goddard 85 Wellerly St.
Mr Arthur Hamey in the chair.
The minutes of the ^{of the previous} previous meeting
were read and confirmed.
The corresponding secretary read
communications from
Editor Annual Messenger, who
kindly expressed his willingness to publish
any notes of this society's work.

From Prof Newcomb acknowledging
receipt of notice of election.
From Miss Agnes Clark who
expressed her thanks to Messrs Miller
& Patterson for the high opinions
they had expressed of her works.

The recording secretary read some ex-
tracts from letters received from Mr J. B.
Donaldson, containing some reports of
observations.

Mr D. H. Watt of Toronto was
nominated for actual membership
by Mr Elvin & Mr Lindsay
Mr W. P. Robinson of Toronto was
nominated for actual membership
by Mr Pusey and Mr Lowndes.

The nominations for officers
for the ensuing year were
then proceeded with in accordance
with the constitution as amended.

They resulted as follows:

For Hon. President

Hon G. W. Ross LL. D.

President

Chas. Carpenter M.A. F.R.A.S.

Vice Presidents

the constitution providing

for two

Dr Lancelot W Smith 26

Jno H Paterson M.A.

Corresponding Sec.

G E Lawrence

Reading Sec

Thos Hindley

Treasurer

D J Howell

Librarian

D. G. Ross

Mr Howell addressed the
chair on his favourite
subject of finance and
requested Mr Harvey to
appoint two auditors to ex-
amine the accounts of the
Society.

The chairman decided that this
important and onerous duty
should devolve upon

Mr J. F. Fisher

Mr D. G. Ross.

Omission

and before last paragraph

The other members of the
Council:

Mr A Harvey =
 Mr H F Miller
 J. G. Linscott
 G. G. Pusey
 A. Elvial
 J. Goddard =
 G. A. Hoey =
 S. Porter

Mr Linscott read a letter from
 Mr W. F. Denning in reply to
 Mr Linscott's account of the observation
 of a double shadow on the disc of
 Jupiter ^{recently}. The writer suggested that
 the second shadow may have been a
 spot on the disc. Mr Elvial pointed
 out that the rapid rotation of Jupiter
 would soon have made this apparent
 if it were the case. Mr Linscott had
 however taken this into consideration
 and stated that on the occasion referred
 to the shadows moved together.
 Mr Miller described the state of the
 solar surface and the breaking
 up of one very large spot into two
 on the 26th Dec.
 Mr Elvial presented a paper on
 the "Red spot on Jupiter" which
 was taken or read.
 A paper contributed by Mr W. F. Denning
 of Bristol Cong. was also taken as
 read. The subject was
 "New Nebulae" and Mr =

hundred had a short extract
 from it giving the position of two
 whose recently discovered, not
 hitherto recorded
 1^m in R A 3^m 31^m 10^m 1 Sept 20
 Decl. 76° 18' North } 1891
 2 R A 3^m 56^m
 Decl. 69° 29' North }

This was originally discovered Nov 20
 1890 and particular attention paid to
 it on Dec 4th 1891 after Mr. Dunning
 found that it was not as at
 first supposed one of Prof. Swift's
 discoveries.

Mr. A. Elvins alluded feelingly to
 the death of Hon. Sir Adam Wilson,
 a warm friend of the Society
 and one of its Life members.

It was thereupon moved by
 Mr. A. Elvins recorded
 by Mr. hundred and
 resolved

that the Society leaves with
 the deepest regret of the sudden
 illness and death of the Hon. Sir
 Adam Wilson, one of its Life members
 who on the occasion of his last
 attendance, presided over its deliberations,
 that it desired to express its sense of
 his great worth as a public and as
 a private citizen and to record
 its appreciation of the kindly interest

taken by him in the work of the Society and of his effort to promote its welfare.

That this Society wishes to express its sympathy with Lady Wilson in the loss sustained by her and to assure Lady Wilson that the recollection of happy gatherings ^{as she has so long} will be fondly cherished by its members and that a copy of this Resolution be sent to her

Also that as a mark of respect to the deceased the Society do now adjourn.

Carried

The next meeting which would be the annual meeting of the Society was arranged to be held in S. Foster's rooms Tuesday Jan 12/92.

Wm Laidray
Recd.

A. E. Evans