

Jan 12th 1904

The first meeting of the year partook of the nature of an
"at home" and was held in the Library of the Canadian Institute
on the evening of Jan the 12th. The President for 1904 C. G. Chant
M.A., Ph.D., in the Chair. The usual order of business was
suspended and the retiring President R. F. Stupart F.R.S.C. was
called upon for his address which dealt with "The Progress of
Astronomy and Physics in 1903"
Amongst other things ~~expressions~~ ^{expressions} regret at inability to be present were received
from Mr. Elwin, Mayor of ~~the~~ ^{the} ~~City~~ ^{City} ~~of~~ ^{of} ~~Hamilton~~ ^{Hamilton} ~~and~~ ^{and} ~~Mr. Ross~~ ^{Mr. Ross}
Rev Robt Atkinson complimented the retiring President upon
the able manner in which he had received the astronomical
and physical work of the year and also expressed to him the
appreciation of the ~~members~~ ^{members} by the members of his efforts to
increase the Society's usefulness during his term of President during the past
^{two} ~~years~~ ^{years}
A number of slides illustrating progress in color photography
sent to the Credit By Mr. Blackett Mechanical Superintendent
of the Government Observatory at Ottawa, were then thrown on the
screen. Mr Miller had charge of the Society's apparatus
and the workings of the spectroscopes. a spectroscope, a sample
of radium and other objects of interest were also on exhibit, after
viewing which many of the members and their friends partook
of refreshments. The evening was one of the most successful
of its kind ever held by the Society.
Mr. ~~Stupart~~ ^{Stupart} of Hamilton, Mr. ~~Stupart~~ ^{Stupart} of Hamilton
and Mr. ~~Stupart~~ ^{Stupart} were declared elect~~ed~~ ^{ed} as
associate members

C. G. Chant
Pres

MINUTES of a meeting of The Royal Astronomical Society of Canada, held at the Canadian Institute on the 19th of January, 1903, the President in the Chair.

Minutes of the meeting of the 12th instant were read and approved.

The Secretary was instructed to write to Mr. Weatherbee, of *Jarvis Centre* and accept his offer to the Society of a Brashear Reflector.

Professor A. Wolfer, Director of Zurich Observatory, was elected to be a Corresponding Fellow of the Society.

The Reports of the Secretary and Librarian were read.

The paper of the evening was given by Professor Alfred Baker, of the University of Toronto, on the subject of "The Beginnings of Astronomy." Professor Baker sketched graphically the successive steps by which man had advanced from his primitive conception of the universe to the theories at present held, pointing out how naturally advance was made from one step to the next in the process of the evolution of scientific thought. In the beginning man thought himself and his little world the centre of the universe; now he knows the world to be subordinate to the sun, which is but one of countless of such bodies thronging the infinite depths of space. This knowledge has been won from the heavens by his genius, devotion and toil. The study of astronomy instructed mankind in scientific method, and on this account the claim of the earliest observers of the heavens to our gratitude is incalculable. An outline of the scheme of the mechanism of the heavens as known to us to-day was sketched, and the problems presented which the early observers were called upon to solve, the reasonableness of their solutions being shown upon such data as were in their possession and the natural steps indicated from one theory to another. The discoveries and conceptions of such teachers as Pythagorus, Eudoxus, Aristarchus, Hipparchus and Ptolemy were explained and accounted for, the work of Hipparchus being especially dwelt upon. He was one of the most remarkable men of any age or any country. In the pursuit of his science he laboured under enormous difficulties. His conception of the system of the world was wrong; his means of measurement were rude; his means of observation were most elementary, and yet if he had had all the refined appliances of modern scientific apparatus his discoveries would have deserved unbounded admiration and have won for him undying fame. Ptolemy's complicated system, which was generally accepted for fourteen centuries, was described, and then that evolved by Copernicus which, as amended by Tycho Brahe and Kepler, is now universally accepted. Professor Baker mentioned the tabulations of his observations made by Tycho Brahe upon which Kepler founded his Laws, and which were utilized by Newton to deduce his theory that the planets were retained in their orbits by the attraction of the sun, and the formulation of the laws governing that attraction, — the Law of Gravitation. The solution of the problem of the universe had called out the highest efforts of some of the greatest minds through more than twenty centuries, and the result finally wrung from the unwilling heavens was the fruit of tireless observation.

A vote of thanks to the lecturer was moved by Mr. Paterson, seconded by Professor McKay, and carried.

C. A. Shaw

M I N U T E S

of a meeting of the Royal Astronomical Society of Canada, held at the Canadian Institute on the 2nd of February, 1904, the President in the Chair.

Minutes of the previous meeting were read and confirmed; a letter was read by the Secretary from Mr. Weatherbee, of Barrie Centre, N.Y., respecting his gift to the Society of an eight-and-a-half-inch Brashear Reflector; nominations were made of four new members; the Librarian's Report was made, and Dr. Marsh reported some interesting observations of the Moon.

The paper of the evening was given by Dr. C. I. Kelly, of Hamilton, upon the subject of "Electricity and Magnetism." Dr. Kelly divided his subjects into three parts, dealing in turn with its historical, elementary and terrestrial and solar aspects. A sketch of the history of the knowledge of electricity and magnetism was followed by some very beautiful experiments given with the aid of fine apparatus, those including demonstrations of X-Rays and wireless telegraphy. The chief feature of Dr. Kelly's paper was the enunciation of a theory that the sun is not hot, and that its rays do not directly heat the earth, but that it furnishes electrical power and the earth heats itself; otherwise, that the sun's rays come to the earth as electricity which, by the resistance of the dense atmosphere of the earth, is converted into heat, light and all vital force; that it is a physical impossibility for heat from the sun to cross the ninety-three millions of miles of frigid ether which lie between the earth and the sun, and that the rays are shot from the sun by the laws of electrical repulsion and drawn to the earth by the laws of electrical attraction. Dr. Kelly summarized his theory as being that the universe of suns and worlds is held in position by the great magnetic influence one exerts on the other and the great magnetic influence the sun exerts upon all the solar system; that the sun is the great central magnet and dynamo of the solar system, which supplies all the electricity necessary for heat, light and vital force for the planets; that the planets supply the component part of electrical energy which is requisite for the life and existence of the sun, and that the outer envelope or corona of the sun is electricity which becomes luminous, waving and flaring out into space as the electrical currents speed on their way to the earth and other planets. Dr. Kelly added that the chromosphere and photosphere of the sun and the aurora borealis of the earth are satisfactorily accounted for by his theory.

A vote of thanks was moved by Professor DeLury, seconded by Mr. Harvey, and an interesting discussion followed the reading of the paper.

REPORT of the business transacted at a meeting of the Council of The Royal Astronomical Society of Canada, held at the Observatory, Toronto, on Tuesday evening, February 9th, 1904, the President in the Chair.

The payment of certain accounts was authorized, these being connected with expenses incurred in connection with the annual At Home of the Society, and printing of programmes, &c., \$24.50 in all.

Moved by Mr. Paterson,

Seconded by Mr. Musson :

That four 32-candle power lights be placed in the lecture-room of the Society to take the place of the arc-light at present in use, and that the Secretary be authorized to incur an expenditure of not more than \$15 for this purpose;

and one lamp for reading purposes

Carried.

on motion
The subject of the conferring of Fellowships was discussed at some length, but ~~it was deemed proper to leave the matter in abeyance for the present, it being moved by Mr. Paterson and seconded by Mr. Miller that the next order of business be brought before Council.~~ *was proceeded with -*

Moved by Mr. Atkinson,

Seconded by Mr. Musson :

That Professor John Watson, M.A., LL.D., of Kingston, who is expected to lecture before the Society on the 18th of March next, be tendered the sum of \$25 and his travelling expenses;

Carried.

At the suggestion of Mr. Musson, the Council requested the Secretary to communicate with Morang and Company, Limited, respecting the handling by that Company of the Transactions of the Society.

~~Mr. Paterson and Mr. Maybee were asked to act as a Committee to consider the revenue of the Society, and the Grants received by it from the Provincial Government and otherwise.~~

To see that the present Grants are continued; also to take steps necessary to interest the Dominion Government in the work of the Society.

Moved by Mr. Atkinson,

Seconded by Mr. Maybee :

That the Curator and the Mover be a Committed to make inquiries respecting a new stock of lantern slides.

Carried -

MINUTES of a meeting of the Royal Astronomical Society of Canada, held at the Canadian Institute on the 16th of February, 1904.

Minutes of the previous meeting were read, and ~~with~~ ~~an amendment~~, confirmed.

Report of Council meeting read with an amendment, Confir

The following new members of the Society were then elected :

Mr. R. A. Ptolemy, 209 McNabb Street, Hamilton;
Nominated by Dr. D. B. Marsh and Mr. J. M. Williams.

Mr. Harry S. Wilkinson, 109 McCaul Street, Toronto;
Nominated by Messrs. Alfred Macfarlane and J. R. Collins.

Mr. Andrew Yule, Aurora;
Nominated by Messrs. J. R. Collins and Robert S. Duncan.

Mr. Herbert J. Charles, Aurora;
Nominated by Messrs. J. R. Collins and Robert S. Duncan.

The name of Mrs. Greenhow Banks was proposed for membership, nominated by Mrs. Eddis and Mr. J. Edward Maybee.

The Report of the Librarian was read.

Mr. Weatherbee reported having observed an exceptionally deep sun-spot on the

The paper of the evening was given by Mr. John A. Paterson, M.A., K.C., and took the form of an astronomical "Chalk Talk." Mr. Paterson explained the term "sidereal day" as distinguished from the sun's day; methods of determining latitude and longitude; methods of weighing the heavenly bodies; Bode's Law and Kepler's Laws; Mr. Paterson ~~showed~~ showed how it was possible to deduce from examination of the ancient star-charts the part on the earth from which the early astronomers must have made their observations, and also how long ago those observations were made; reference was also made to the arc described by Polaris around the true pole of the heavens, and how in surveying land allowances have to be made for variations in the position of Polaris.

Colchant

Pres.

March 1, 1904

PUBLIC LECTURES

- *Mar. 8th—THE RISE AND PROGRESS OF PHYSICAL ASTRONOMY.
I. "The Work of Newton."
PROF. A. T. DELURY,
Toronto University.
- *Mar. 18th (FRIDAY)—"The Relation of Philosophy to Ancient and Modern Theories of Cosmogony."
PROF. JOHN WATSON, M.A.,
LL.D., Kingston.
- *Mar. 22nd—THE RISE AND PROGRESS OF PHYSICAL ASTRONOMY.
II. "The Sequel to Newton's Discoveries."
PROF. DELURY.
- *Mar. 29th—III. "Speculations on the Evolution of the Solar and other Stellar Systems."
PROF. DELURY.

*The last four lectures will be delivered in the Chemical Building of Toronto University.

The Programme for April, May and June will be announced in due time.

The regular meetings are held in the Society's Rooms, Canadian Institute 58 Richmond Street East.

DR. JOHN WATSON LECTURES ON HISTORY OF PHILOSOPHY

Speaks Before Representative Audience in the Chemical Building of Toronto University.

Last night John Watson, M.A., LL.D., professor of philosophy in Queen's University, Kingston, delivered the second of the special course of public lectures arranged by the president and council of the Royal Astronomical Society of Canada. His subject was "The Relation of Philosophy to Ancient and Modern Theories of Cosmogony," and notwithstanding the formidable title a good and representative audience attended in the chemical building of the university, and were rewarded by a lecture combining, as Prof. Clark justly remarked, profundity and lucidity.

Prof. Watson began by tracing the early theories of the Greek philosophers with regard to the nature and plan of the universe. Thales, he said, was the first to resolve all things into a single whole, and made water their ultimate principle. He set the problem which had occupied all succeeding ages, and that was what is the unity that binds together the various parts of the universe? Xenophanes had perceived that the unity of the cosmos was altogether different from that of any mortal creature, and while he made no contribution to astronomy he had made a clean sweep of the old theology and prepared the way for a new conception of the universe. That was a wonderful guess of Pythagoras when he made the sun the centre of the visible universe round which the earth revolved, but in the absence of proof it bore no fruit for twenty centuries.

Passing over a period of 250 years, Prof. Watson took up and explained the theory of Eudoxus, that the earth stood still while the moon, sun, planets and stars moved round it in concentric spheres. But he found it difficult to account on this theory for the varying movements and velocities of the heavenly bodies as ascertained by observation, and was therefore obliged to postulate four additional spheres moving on different planes. His disciple, Calippus, added others till he reached the number of thirty-three, and then congratulated himself on the simplicity of his explanation. Aristotle accepted Calippus' notion and added fourteen other spheres, making in all forty-seven. This great philosopher had been condemned by Lewes and others as an a priori thinker, but the charge was unjust. His speculations were attempts

to explain undeniable facts as they presented themselves to the minds of his time, and he sought for a mechanical cause. He believed in the regularity of movement of the heavenly bodies and accepted the only explanation consistent with the facts so far as then known. His method was that of careful observation and induction, and he was not responsible for the methods of his mediaeval successors, who did not follow his plan, but blindly followed his results.

Prof. Watson then subjected the philosophy of Aristotle to a somewhat detailed examination, pointing out its main features and explaining the sense in which he used his special terminology. Incidentally he referred to Dante's great poem, as based on the Ptolemaic ideas. Read Dante, he said, if you wish to understand the system—he is worth reading, anyway. The scholastic philosophy, however, prepared the way for the new cosmogony of Copernicus. With him the unlimited world of Aristotle vanished. But modern philosophy still followed Aristotle, altho placing a new interpretation on the facts of experience, and its conception rested on a mechanical basis of the world. What, however, is to be said of the higher interests that so vitally concern us as men—of the ideas of God, freedom and moral responsibility? It was the German thinker, Immanuel Kant, who had first stated this problem with clearness. He was the author of the nebular hypothesis afterwards worked out by Laplace.

The professor then took up the relation of modern philosophy to modern cosmogony. The solar system, he said, cannot now be regarded as having existed in its present form from all eternity, but as having been evolved. There is no bounded sphere enclosing the world, but an illimitable space containing world after world, system after system. A perfect circular motion is a fiction—all are subject to the universal law of gravitation—the stars contain no purer elements than the earth itself. How does this affect the traditional faith? Can we attribute to man that perfection of the Hebrew psalmist when he declared man was made a little lower than God? Are we to conclude the immortality of man is a dream and can the existence of God stand the shock of this explanation of the universe? While he did not think Kant's answer adequate or final he regarded it as indicating the true lines of solution and speculative thought was still wrestling with this great problem.

The lecturer then briefly indicated the salient points of Kant's system, and particularly his finding a basis for belief in God, freedom and immortality in the consciousness of moral responsibility. Dealing with the conflict between religion and science, Prof. Watson said that there was no real antagonism except with traditional beliefs. Science can only deal with the facts of experience. Knowledge is the interpretation of experience. The idea of an artificial creation must be discarded along with the idea of artificial interference after creation. Things are not made in vain, but constitute a rational world which affords to man a clear revelation of the Divine reason.

SEQUEL TO NEWTON'S DISCOVERIES

Professor De Lury Delivers an Interesting Lecture.

Last night in the chemical building of the University of Toronto, A. T. DeLury, M.A., delivered the third of the special course of public lectures promoted by the Royal Astronomical Society of Canada. It was also the second of his own series on "The Rise and Progress of Mythical Astronomy," the special subject being "The Sequel to Newton's Discoveries."

In opening Prof. DeLury briefly recapitulated his previous lecture on "The Work of Newton," and described the nature of the Copernican theory of the solar system and the manner in which it explained the observed movements of the bodies which compose it as known in his time. The theory, he said, postulated the earth as an approximately spherical body, rotating on its axis and completing its journey round the sun in the divisions of time called a year. The observed changes in the positions of the moon were explained by its motion round the earth. What were known as the planets, distinguished from the fixed stars by their greater brilliancy, had also been found to have a shifting position among the stars, and were remarkable for their intricate movements. It had also been concluded that they also moved round the sun in a similar way to the earth and in elliptical orbits.

Newton's Attention Attracted.

Newton's attention had been drawn to the falling of bodies towards the earth's surface, and he had supposed it arose from an attractive force exercised from the earth's centre, for at all points, whether on the highest mountains or in the lowest mines, the motion was towards the centre. Magnetism had familiarized observers with the idea of an attractive force, and it was natural to suppose that the earth itself might also have that property. Newton had asked whether that force might not extend to the moon, and assumed that it would act inversely as the square of the distance of the object from the earth's centre. Taking the moon as at a distance of 80 times the earth's radius, he found his theory did explain the phenomena, altho very roughly. But it afforded a clue to all the celestial motions.

Carrying his theory still further, and, as the planets were not points but bodies, he treated gravity as an essential property of all matter, and attributed to every particle as exerting an attractive force on every other according to the same law, which he stated thus: that every particle of matter acted on every other inversely as the square of the distance between them and directly in the mean of the attracted particle. Philosophers felt that in this Newton had found the key to the visible universe, and they looked to it not only to explain the things that had been seen, but also the irregularities in the shape, orbits and motions of the heavenly bodies.

Investigated Shape of Earth.

As a sequel to his own discovery, Newton proceeded to investigate the figure of the earth, which was known not to be truly spherical, but to bulge at the equator and to be flattened at the poles. By calculation he found the proportion of the diameters at these points to be as 229 to 230, and actual measurement had proved it to be substantially correct. Then his theory explained another difficulty. Early Greek astronomers had observed that the sun's apparent path thru the heavens, or ecliptic, did not cross the equator each year at the same point among the stars, but that the point traveled backward along the equatorial line. The phenomenon called by them the precession or anticipation of the equinoxes, Newton's law also satisfactorily accounted for thru the varying attractive force of the moon and sun upon the particles constituting the earth's mass. This caused a nutation or nodding of the axis, an effect shown in the swaying motion of a top, which, at the same time, rotated on its fixed point.

Looked on the Moon.

Newton had next turned his attention to the motion of the moon. It was necessary for the purposes of navigation that the positions of the moon should be known in advance, but tables were found not to be reliable. Early in the eighteenth century a reward of £100,000 had been offered to the inventor of accurate lunar tables. The root of the difficulty was the triple motion and attraction of the earth, moon and sun, and, altho the results were now practically satisfying, a final solution had not yet been found.

Other difficulties connected with the moon's motion had also been removed by the application of Newton's formula, and it became accepted more and more as it continued to stand the test of all requirements. But it was to do even more than stand this test. The planet Uranus had been discovered by Herschell in 1781, and interest centred round it, since if a planet it must move in accordance with the common law. Observers in making their calculations allowed for the attraction of the other known planets, but Uranus persisted in behaving in an irregular manner, and there remained a residual difference between the calculated and actual motions of the

new planet. A great many mathematicians took up the problem, but it was left to Adams of Britain and Le Verrier of France to solve it. Early in September, 1846, Le Verrier wrote to the Berlin observatory requesting that a part of the heavens he indicated be examined at a named time. It happened that shortly before that observatory had completed a map of that part which included all the observed stars down to those of the eighth magnitude. An examination at once showed what seemed to be a star of the eighth magnitude not recorded on the map, and therefore which could not have been there at the time the map was made. It was the new planet, really discovered by theoretical calculation, and the circumstance was universally regarded as a great triumph for Newton's theory, as it established it beyond reach of criticism. It was an experimentum crucis.

Accounted For Many Things.

In conclusion Prof. DeLury pointed out that Newton's law also accounted for the apparent motion of the double stars, from which it was inferred that the law of gravity was all pervading and extended outwards thruout space. Next Tuesday night the professor will deliver the concluding lecture on "Speculations on the Evolution of the Solar and Other Stellar Systems."

World, 19 March, 1904.
23

HOW THE EARTH IS SWAYED

Prof. De Lury Lucidly Explains Terrestrial Motions.

Newton's Theory the Germ of All Great Modern Discoveries.

In discussing "The Sequel to Newton's Discoveries" last night in the Chemical Building of the university, Prof. De Lury explained in a lucid and popular way many of the technical points to be met with in the study of physical astronomy. Newton, he said, had shown that the moon was drawn to the earth, and the earth and planets in turn were drawn towards the sun, and that the planets perturbed each other when at their nearest approach—all by the mysterious force called gravitation. Newton concluded that a body the size of the earth, when rotating as rapidly as theory implied, should bulge at the equator and flatten at the poles. The figure he then—from theoretical considerations—gave to the earth, did not, said the lecturer, differ materially from the latest actual measurements made. All the stars appear to move in the sky either around the north or south poles of the heavens, the line midway between those points being termed the equator.

A person pointing one hand at the pole star and elevating the other so as to form a right angle, and sweeping the arm across the sky from west to east, would indicate the equator. Then the plane of the ecliptic or path of shifting from day to day of the sun across this line, performing a circle, returned upon itself yearly. The points of crossing the Celestial equator were called the equinoxes, and it was found that this point shifted slowly backwards, rotating once in 25,000 years. This was known technically as the precession of the equinox. This procession had been shown to be due to the pull of the moon upon the earth's bulging equator as she swayed from side to side across it. Double stars had been observed to revolve around each other, indicating that the same force that swayed the planets around the sun also extended into the abyss of space around us. Modern methods of analysis were much more refined than Newton had at his command; facilities had become available to the astronomer not then known. New problems had unfolded themselves, but the explanation of all contained the germ of Newton's work.

Mail 19 March 1904.
23

SOLAR SYSTEM CHANGING.

Prof. DeLury Gives Interesting Lecture at the University.

Professor De Lury, of the University of Toronto, delivered an interesting lecture in the Chemical Building of the university last night on "Speculations on the Evolution of the Solar and Other Stellar Systems," the last of the series of March lectures given under the patronage of the president and council of the Royal Astronomical Society of Canada. Prof. De Lury reviewed the evolutionary theories that have been advanced till the present to account for the condition of the solar system, which is gradually changing in all its members, including the sun itself. This development suggests as growth from some simple prior state to the more complex that is now seen everywhere. When Newton demonstrated the probability that a common gravitation existed throughout the visible universe, thinking men must of necessity form theories as to the method of its action in moulding the heavenly bodies as well as the earth. Des Cartes suggested that an imminent vortex existed in the solar system with the sun as its centre and the planets secondary vortices collecting material to themselves as they whirl around the sun as their centre and so likewise of the other stellar systems. Kant, on the other hand, suggested that groupings of matter acted upon by gravitation only would form local points of condensation in a highly attenuated material distributed everywhere throughout space. La Place was content with dealing with the solar system in this way, which contracted upon itself, into its present form. The lecturer enlarged upon this and exhibited on the screen photographs of several nebulae showing an apparent breaking up into rings and points of condensation right before the observers of the present day, notably the nebulae in the constellation andromeda and one in Leo. While many of the nebulae have not this form, a sufficient number exist to indicate the probability of some mode of development in a large number of cases. Many of the strong points of the nebular theory were emphasized and many of the objections to it stated.

In referring to the moon, Professor De Lury said that Professor G. H. Darwin showed that the tide on the earth produced by the moon was thrown forward on account of the rapid daily rotation of the earth, beyond the point immediately under the moon, and thus displaced the actual centre of mass of the earth to a shifting point continually in advance of the moon. The effect of this must be to throw the moon further and further away, but at the same time the tide must act as a break on the earth, and is actually though gradually slowing up the rotary motion of the earth. This will go on until the advent of a time when the earth's day will be a month in length. The tide then on the world will take time to be drawn up into position and the centre of the mass of the earth will be a constant shifting point behind the geographical centre, and this will continually though slowly draw the moon back again to the earth until it finally amalgamates with it. *Mail, Feb*

*Mail & Empire
30 March.
1904.*

4

MINUTES of a meeting of The Royal Astronomical Society of Canada, held at the Canadian Institute on the 1st of March, 1904.

The Secretary reported the receipt of several communications, including a letter from Mr. ~~Lash~~^{Barr} Miller, referring to his original work on Gamma Orionis and offering a short paper on the subject.

Mrs. Greenhow Banks was duly elected to be a Member of the Society.

The names of Mr. J. ~~Barr~~^{Barr} Miller and the Reverend John Burwash were nominated for membership.

The paper of the evening was given by Mr. J. Edward Maybee, M.E., on "The Sun-dial and its Lessons." Mr. Maybee said that a thorough knowledge of the principles underlying the recording of time by a sun-dial implied a thorough understanding of the relative motions of the sun and the earth. Reference was made to the history of the sundial, and to its development from an instrument dividing the time of daylight into twelve equal parts, irrespective of the length of the day, into the sun-dial as at present use. Mr. Maybee explained in detail the construction of a sun-dial which he had made, and the method by which his measurements had been made, and offered the use of his plans to any member of the Society who might wish to make a similar sundial.

Jan 16/04

Dear Miss Hunt

This is Mr J. Miller Barr's description
of the variable he claims to have discovered
in Orion α no 943 a period of
variability - of about 18 hrs or one of 36 hrs
with two closely equal minima Range of
variation about 0.4 mag. Catalogue Howard
Photometric Catalogue 1900 R.A. $5^h 25^m 5^s$ Dec $-1^{\circ} 14'$
on the night of Mar 16th he noticed a
variation of from 3 to 4 grades in less than 3 hrs
Kindly insert in. minutes

Yours truly

J. B. Miller



(J. Barr Miller
is a minor star
Miller Barr
it should be Mr)

List of Officers:

Honorary President—The Hon. Richard Harcourt, M.A.,
LL.D., K.C., M.P.P., Minister of Education.
President—C. A. Chant, M.A. (Tor.) Ph. D. (Har.),
Lecturer in Physics, Toronto University.
1st Vice-President—Alfred T. De Lury, M.A. Associate
Prof. of Mathematics and Astronomy, To-
ronto University.
2nd Vice-President—W. Balfour Musson, 22 Park Road,
Toronto.
Treasurer—J. Edward Maybee, M.E., 103 Bay Street,
Toronto.
Secretary—J. R. Collins, 131 Bay Street, Toronto.
Recorder—Miss Elsie A. Dent, 17 St. James Avenue.
Librarian—Alfred McFarlane, M.A., Toronto.
Curator—Robt. S. Duncan, 516 Ontario Street.

Council:

The above officers, with the following members, constitute the Council of the Society: A. F. Miller; Rev. Robt. Atkinson and Rev. Dr. Marsh, Hamilton; elected by the Society, and the following Past Presidents: Andrew Elvins; Larratt W. Smith, K.C., D.C.L.; J. A. Paterson, K.C., M.A. (Toronto); Arthur Harvey, F.R.S.C., Honorary President and Director, La Instituto Solar Internacional Monte Video, Uruguay; and R. F. Stupart, F.R.S.C., Director of the Toronto Observatory and Superintendent the Dominion Meteorological Service.

The Royal... Astronomical Society of Canada



Programme

... for ...

April, May and June

1904



Papers and Subjects for Discussion.

... Session ...

April, May and June

1904

- April 5th—The Planetesimal Hypothesis.
PROF. A. P. COLEMAN, D.
- April 19th—Stellar Motions.
A. F. MILLER.
- May 3rd—"Man's Place in the Universe" a
review of Alfred Russell Wallace's
Recent Book.
J. R. COLLINS.



- May 17th—Solar Activity.
PROF. LUIS LEON, Mexico City, Mexico.
- May 31st—The Paris Lunar Photographs, with
Lantern Slides of the latest plates.
D. J. HOWELL.
- June 14th—Some Late Results in Astrophysical
Research.
W. B. MUSSON.
- June 28th—Evening at the Observatory.
QUEEN'S PARK,

Announcements of open air meetings will be made through the press.

The Society publishes yearly Transactions and has a library open to its members.

Membership fee for Gentlemen - \$2.00
" " Ladies - 1.00

Application for membership may be made through any of the Society's officers or members.

The first regular meeting after the summer holidays will be held on Sept. 13th.



4

MINUTES of a meeting of The Royal Astronomical Society of Canada, held at the Canadian Institute on the 5th of March, 1904, Mr. W. Balfour Musson, Vice-President, in the Chair.

Communications were read by the Secretary from Dr D.B. Marsh, respecting his recent observations of Gassendi; and from Mr. J. Miller Barr, respecting his observations of Upsilon Orionis, which he finds to be variable.

Mr. Alexander Fraser, Toronto, and the Reverend G.H. Livingstone, were duly elected to be members of the Society.

Mr. *W. H.* Plant, Toronto, was nominated by Mr. Elvins and Mr. J.R. Collins for membership.

Moved by Mr. Harvey, seconded by
That the photographer be requested to make lantern-slides of the photographs of nebulae made by Mr. Ritchie:
Carried.

The address of the evening was given by Professor A.P. Coleman, on "The Planetesimal Hypothesis."

Philosophers, astronomers and physicists have made theories as to the origin of the world, said Professor Coleman, and geologists have usually bowed to their decision. The Nebular Hypothesis explains many things admirably, but there are serious objections to that theory, from the point of view of a geologist, some of which were mentioned. Professor Coleman touched upon Lockyer's Meteoric Hypothesis, and then described the Planetesimal Hypothesis. This, he said, permits of the formation of the world at low temperatures, small particles falling together at small velocities, not making high surface temperature. Each particle carried its small quantum of gases, as meteorites do, and these gases were entrapped in the porous mass. Until the size of the moon was reached no atmosphere could be retained. As the planet grew it would hold gases better and better and become enclosed in an atmosphere, retaining solar heat and surface temperature till water could exist as a liquid. The atmosphere then is derived from the interior, perhaps partly collected from wandering gases. The shrinkage of earth by self condensation is far greater than by loss of heat. The latter gives only 600 miles shrinkage in circumference, mostly in early times. This is far too little for all the mountain ranges; hence the irregularities of the surface, (sea-bottoms, continents, mountains) which are better accounted for by the Planetesimal Hypothesis, the geological time being greatly lengthened. The old theory made all the carbon of the earth come from the atmosphere, which must in earlier times have contained at least 20,000 times as much $C O_2$ as now. Animal life is inconceivable under these conditions. The earliest known rocks are sedimentary, not igneous, as the old theory demanded. Volcanic phenomena are explained by the expansion of H_2O and gases already in the rocks; fluid and gaseous inclusions in igneous rocks are accounted for, and volcanoes are possible away from the sea-coast. Volcanoes are outlets for earth's gases. Meteorites are still falling. It is estimated that from 15,000,000 to 20,000,000 fall daily. If they average ten

--2--

grains each the total amount reaching the earth is 5,000 to 7,000 tons per annum. The tidal theory of Darwin for the origin of the moon is not borne out by geology. Tidal motion as shown by bedding of Potsdam sandstone no greater than now. Even Huronian sediments show structures having the same range as present.

The paper was followed by a discussion in which Mr. Miller, Mr. Harvey, Mr. Percy and Mr. Collins took part, a vote of thanks to the lecturer being moved by Mr. John A. Paterson seconded by Professor A.T. DeLury, and carried.

ca. 1904

April 19/04

M I N U T E S

of a meeting of The Royal Astronomical Society of Canada, held on the 19th of April, 1904, the President in the Chair.

Minutes of the meeting of the 5th of April were read and adopted.

A letter was read by the Secretary from the Secretary of the Royal Society of Canada, stating that the annual meeting of that Society will be held in St. John, N.B., in June next, and requesting that a member of this Society be nominated to represent it at that meeting.

Mr. W. H. Plant was elected to be a member of the Society.

The following nominations for membership were read :

William Spry, D.L.S., O.L.S., nominated by Messrs. C. A. Chant and J. R. Collins;

T. W. Gibson, Toronto, nominated by Messrs. J. A. Paterson and C. A. Chant.

Under the head of "Reports of Observations," Mr. Percy reported his observations of sun-spots during the last week, and an astronomical bulletin from Harvard Observatory was read, announcing the discovery of a comet by Professor W. R. Brooks, at Geneva, N. Y., on the 16th instant.

The paper of the evening was given by Mr. A. F. Miller, in continuation of a series upon the subject of Stellar Motion. Notes of Mr. Miller's paper are appended.

C. A. Chant
Pres

Stellar Motions, IV. A. F. Miller.

Mr. Miller gave a brief resumé of his former addresses, treating of Precession, Nutation, aberration and Proper motions, which latter term, ^{he said,} might better be distinguished as Angular Proper Motion, since in its astronomical sense it is restricted to that component of ^{the} stars' real motion performed at right angles to the sight-line. Adopting that term, a motion of recession or approach in ^{the} stars would be properly called its Radial Proper Motion. He demonstrated the impossibility of arriving at any knowledge of the stars' motions towards or from the observer by the methods of geometrical astronomy or by changes in their brightness; and pointed out that curiously enough the method available in such investigations sprang directly from a mathematician's blunder! That word however must be qualified by the remark that it was a blunder of which its originator never had reason to feel ashamed. He briefly outlined the life and work of the great Austrian mathematician Christian Doppler, and explained the Principle which bears his name ^{by quoting} the inventor's own words, and giving in simplified form ^{his} diagrams. Doppler made it very clear that ^{the} motion of a star towards or from the observer, (or equally, the observer's motion towards or from the star), must affect the wave-lengths and wave-frequencies of the light received from it; this fact, though it can never affect the star's color, as Doppler erroneously maintained, does most certainly occasion a shifting of the "lines" seen when its light is examined by means of a spectroscope. He showed that by measurement of this shift, (technically known as the Displacement), having also the wave-length of the same line in a spectrum at rest, and the velocity of the transmission of light, a simple formula at once gives the value of the star's radial motion in miles or kilometers, together with the direction of that motion. This result must of course be cleared from the effects of the earth's motions, for which purpose tables have been calculated.

He described the star-spectrometer and star-spectrographs by means of which observations of the displacement are made, and called attention to the fact that just 150 years had elapsed between the detection of the first angular proper motion of a star (by Halley in 1718) and the first measurement of radial motion (by Huggins in 1868). In giving a list of stars having considerable motions in the eight-line he remarked that these motions should always be stated as occurring at a given epoch (the time of the observation), since not merely their amount, but even their direction had been found to vary in some instances after the lapse of several years. He referred to the possibility of a shifting of the spectral lines through other causes than motions of recession or approach, showing however that the spectroscopic method as now employed is deserving of the fullest confidence. He incidentally mentioned the enormous changes of wave-length which occur when blue or violet light ^{is} reflected from the surface of a salt of uranium. Calculations showed that to account for such a displacement by Doppler's principle would require a ^{velocity} of 35,000 miles per second. This gives some idea of the vastness of ~~what~~ molecular motions and the expanding forces by which the molecules are actuated. These motions and forces differ only from those which the astronomer discovers among the celestial bodies as regards the function of time. Such considerations impress upon us the importance of connecting physical investigation with astronomical research, as well as the need for taking into account every known fact before finally drawing conclusions from the results of observation and experiment.

side
a
u

M I N U T E S

of a meeting of the Royal Astronomical Society of Canada held on the 3rd of May, 1904, the President in the Chair.

Minutes of the previous meeting were read and adopted.

A letter was read by the Secretary from the Secretary of the British Association for the Advancement of Science, asking that a copy of the Society's Report be supplied to it, and that a representative be nominated to represent the Society at its next meeting.

The Secretary also reported the receipt of a communication from Professor Wolfers, of Zurich, accompanying some valuable contributions to the Society's library.

The resignation of Mr. J. Edward Maybee as Treasurer was read, Mr. Maybee being unable, owing to ill health, to continue the duties of his office. It was moved by Mr. Paterson, seconded by _____ that Council take steps to provide an assistant to Mr. Maybee in his work.

Messrs. William Spry, D.L.S., O.L.S., and T.W. Gibson, were duly elected to be members of the Society.

Messrs. Percy and Weatherbee reported observations of sunspots during the last week.

A Council meeting was called by the President for the 10th instant.

The paper intended to be given was held over for a fortnight, and the event of the evening was the presentation to Mr. Andrew Elvins of a congratulatory address upon the occasion of the attainment of his eightieth birthday. The presentation was made by Mr. Paterson in a few words happily expressed, and was replied to by Mr. Elvins. Short addresses, all breathing the spirit of congratulation and good-fellowship, were given by Messrs. Miller, Harvey and Atkinson

Calhoun
Pres't

M I N U T E S

of a meeting of the Royal Astronomical Society of Canada, held on the 17th of May, 1904, the President in the Chair.

Minutes of the meeting held on the 3rd instant were read and adopted.

The matter of the appointment of a delegate to represent the Society at the meeting of the British Association for the advancement of Science, to be held in ~~Council~~ *Cambridge* this summer, was taken up, but left in the hands of the President and Secretary to arrange.

Communications were read by the Secretary from Mr. Weston Weatherbee, Mr. J. Miller Barr, Professor Pickering, Professor Holden, and a translation of a lengthy letter received from Professor Wolfer, upon the subject of solar phenomena.

Report from Council was read, and on the motion of Mr. Paterson, seconded by Mr. Musson, adopted.

On the suggestion of Mr. Chant that a committee of three be appointed to assist the Librarian, it was finally decided that the committee be composed of the President and Messrs. Harvey and Musson.

The Librarian reported the addition of seven new volumes to the Library, and the usual exchanges.

The paper of the evening was given by Mr. J. R. Collins, and consisted of an extended review of Professor Alfred Russell Wallace's book, "Man's Place in the Universe," notes of which are appended.

For the Reader
J. R. Collins

C. Chant

May 31, 1904

M I N U T E S

of a meeting of the Council of the Royal Astronomical Society of Canada, held on the 10th instant, the President in the Chair.

The resignation recently received from the Treasurer was first discussed, and, it being understood that Mr. Maybee was willing to act if clerical assistance were furnished to him, Mr. Harvey undertook to relieve Mr. Maybee of some of the work connected with his office.

The most important business before the Council was the passing of an account for the publication of the Transactions, \$315.80 in all, upon which a balance of \$60.80 being unpaid was approved and ordered to be paid.

It having been arranged between Mr. Musson and the Morang Company that the Company should handle the Transactions for public sale, Mr. Musson was authorized to direct the Company to dispose of them at whatever price may be necessary to cover actual expenses.

Moved by Mr. Musson that, in view of the possible desirability of increasing the insurance of \$750 at present held on the Society's property, the Librarian and Curator be instructed to prepare reports as to the condition and value of the books, charts, etc., such report to be presented at the next meeting of Council.

Considerable discussion took place upon the subject generally of the condition of the library, it being the general opinion that the interests of the Library would be best served if it were governed by a Library Committee to act with the Librarian. The Librarian expressed his willingness to act without remuneration, and it was finally decided that the President be given power to advise with the Librarian and to decide respecting the disposition of all Library matters.

May 31st

The Regular Meeting of the Royal Astronomical Society of Canada was held at the Canadian Institute on May 31st. The President was in the Chair

The Minutes of the previous meeting were read and confirmed

Communications were reported from Boston. Withnote of Bonn Centre by J. Miller Power, St Catharines Ont, and from Cleveland Ohio of Washington in reference to a supposed change in the transparency of the Earths atmosphere during the years 1902 and 1903 and a number of acknowledgments of receipt of the Societys Proceedings

Walter Charles Stinson, Sarina Ont was nominated as an associate of Robinson and W.B. Messon

Mr Elwin Robinson attending to an article in Peares magazine dealing with the shadows of the mountains in the ~~mountain~~ ^{mountain} range which the paper for the evening was by ~~Dr. Howell~~ ^{Dr. Howell}

who had undertaken to ~~photograph~~ produce Southern States from the Paris atlas of the moon now in the possession of the Society. Mr Howell exhibited the slides on the screen and explained the methods employed in producing the photographs and the instruments used after which he presented the slides to the Society - this collection includes some of the best views of the lunar surface that have ever been taken and were much appreciated by the members

In Reply
W.R. Collins

W.B. Messon

June 14/04

The Regular meeting of the Royal Astronomical Society of Canada was held in the Canadian Institute on June 14. The President in the Chair

Communications were reported from
A. F. Hunter Barrie, The Yale University Observ.
Prof. ^{G. H.} Pickering, John Cramer Library N.Y.
F. R. Cloughie, Fondon Eng, The Yerkes Observatory
Mc Gill University

Members elected - Walter Charles Houston, Sarnia -
James Mc Carthen 148 Montreal St -
Albert L. Burnham 355 Church St Toronto

The Paper for the evening was by ~~John~~ W. B. Newson
on "Some Late Results in Astrophysical Research"
with special reference to Spectroscopic work

The last open meeting of the Society was held
in the Toronto Observatory a large number of
visitors were present and a number of interesting
objects were viewed and a profitable evening was spent

cafhant
Pres.

Society Garden Party
Sept 19/04

SAW JUPITER AND SATURN.

Members of Astronomical Society
Were Star-Gazing on Saturday.

The members and friends of the Royal Astronomical Society of Canada to the number of about one hundred were entertained at a garden party by Mr. John Ellis on his grounds at Swansea on Saturday evening. A number of telescopes were placed on the lawn at the service of the guests.

The weather being fairly clear, a most enjoyable time was spent. The planets Saturn and Jupiter were in a favorable position for observation, as well as our own moon.

The bright rings of Saturn, which modern research has shown to consist of showers of broken rock, the wreck of a former satellite torn to pieces by the tidal action of the planet, and now circling around it, appeared well defined in the telescopes. The belts around Jupiter and several of his moons were well seen. The surface of the moon also appeared very clear. Several features of all these objects are at present of especial interest, several observers having reported observed changes in certain of the surface markings. These observations will be discussed at future meetings of the society.

A most enjoyable and profitable time was spent, and the thanks of the society were tendered to Mr. Ellis for his hospitality.

MINUTES

of a meeting of the Royal Astronomical Society of Canada held at the Canadian Institute on the 20th of September, 1904, the President in the Chair.

Minutes of the last meeting were read and approved.

Communications were read from :

The Secretary of the Royal Astronomical Society, in which he asked to be supplied with some notes respecting the astronomical work of the late G.E. Lumsden;

Professor Beckerton, New Zealand, relating to his theory of stellar impact, and asking whether the Society had discussed any of his work;

The Observatory of the late Sir Isaac Roberts, intimating that his telescopes, etc., are for sale, and Mr. Arthur Harvey, respecting a large meteorite which is reported to have fallen at Shelburne.

Nominations :

F.E. Titus, Gore Bay, Barrister-at-Law,
nominated by Mr. Andrew Elvins,

H. seconded by Mr. George Ridout.

L. Graham, East Toronto, Science Master in the High School,

nominated by Revd. Robert Atkinson,
seconded by Mr. Robert Duncan.

An address was made by Mr. Elvins on various topics of general interest, including the red spot on Jupiter, which appears to be undergoing some change; the death of Sir Isaac Roberts; the death of Captain William Noble, widely known through his letters to the English Mechanic under the name of "F.R.A.S." and the formation of a small astronomical society at Gore Bay.

A discussion followed, in which Mr. Musson, Mr. Sprye and Mr. Elvins took part, respecting the coincidence, if any, between sunspots and the weather, and the meteorite referred to by Mr. Harvey, parts of which are reported by the newspapers to have fallen at Shelburne, Chesley and Tara.

A Council meeting was called for Tuesday evening, the 27th of September, at the Observatory, at eight o'clock.

C. Elvins

President.

MINUTES

of a meeting of the Council of the Royal Astronomical Society of Canada, held at the Observatory, on the 27th of September, 1904, the President in the Chair.

A general discussion took place upon the subject of the coming eclipse of August, 1905, and it was moved by Mr. Collins, and seconded by Mr. Miller :

That a Committee, to consist of the President, Mr. Stupart and Professor DeLury, be formed to consider the advisability of the Society presenting a Memorial to the Dominion Government in favour of the sending of a scientific expedition to Labrador to observe the eclipse, the Committee to report at the next meeting of Council:

Carried.

A letter was read from the Librarian, reporting his illness and inability to at present carry on the work in the Library, and Mr. Musson and Dr. Chant undertook to look into the state of the Library generally.

Authority was given to the President to order certain new books required for the Library.

Moved by Mr. Musson, and seconded by Mr.

That the President and Professor DeLury be a Committee to consider the question of the necessity and desirability of publishing a Report of the Transactions of the Society for 1904:

Carried

President.

M I N U T E S

of a meeting of the Royal Astronomical Society of Canada, held at the Canadian Institute, on the 3rd of October, 1904, the President in the Chair.

Minutes of the last meeting were read and approved.

In order to leave plenty of time for the discussion of the subject of the evening, a Report from Council was held over until the next meeting.

Communications were read by the Secretary from :

Professor Leon, of the Mexican Astronomical Society, asking for information respecting the action, if any, to be taken by the Society towards sending a contingent to observe the eclipse of August, 1905;

Professor Pickering, respecting observations recently made of Phoebe, the ninth satellite of Jupiter.

Nominations for membership were read for the second time of Messrs. Titus and Graham, and, on motion of Mr. Paterson, seconded by Mr. Sprye, the Recorder was directed to cast a ballot, and they were declared duly elected.

Nominations :

Mr. J. H. Hutty, Toronto, nominated by Mr. Ellis, seconded by Mr. Collins.

A most interesting evening was spent in discussion of the origin and composition of meteorites, many specimens of which were shown, including one fourteen pounds in weight which fell on the evening of the 13th of August last on the farm of Mr. John Shields, near Shelburne, Ontario. Mr. Shields was present and related particulars of the finding of the stone. Another specimen of twenty-eight pounds, which fell on the same evening in the same neighbourhood was also exhibited, having been lent for the occasion by Mr. J. F. Gardner. This meteor is believed to have been seen from such widely separated points as Go Home Bay, and Clinton.

Professor DeLury spoke of the origin of such phenomena; Professor Coleman reviewed the subject briefly from a geologist's standpoint, and Professor Walker from that of a mineralogist. A letter was read from Mr. Arthur Harvey drawing attention to the worship which was once accorded to such phenomena. After the meeting the many specimens were closely examined, a number from the collection of the late Dr. Emanuel Hahn being present.

C. A. Grant
Pres.

59

M I N U T E S

of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA held on the 18th of October, 1904, at the Canadian Institute, the President in the Chair.

Minutes of the previous meeting were read and approved.

Minutes of a meeting of Council were read and approved.

Communications were read by the Secretary from :

The Reverend Robert Atkinson, Chesley, Ontario, respecting his recent observations;

J. Miller Barr, respecting his observations of variable stars, and

The Reverend E. W. J. Claridge, F. B. A. S., of Burton-on-Trent, England, asking for a copy of the Society's Report, etc.

The following nominations for membership were read :

Henry Gray, Principal of Fern Avenue School, Toronto;
nominated by C. A. Chant and E. A. Dent.

W. Inrig, 7 Sussex Avenue, Toronto;
nominated by C. A. Chant and E. A. Dent;

Robert P. Hall, Toronto Junction;
nominated by J. R. Collins and C. A. Chant.

The nomination was read for the second time of Mr. J. H. Hatty as a member of the Society.

Moved by Mr. Ellis, seconded by Mr. Elvins, that the Secretary be directed to cast a ballot in favour of Mr. Hatty's election, and Mr. Hatty be declared to be duly elected.

Predictions of the movements of Jupiter's satellites were read by Mr. Clipsham.

The paper of the evening was given by Mr. J. R. Collins, in the form of a review of some recent markings on Mars and other planets. The paper was illustrated in an interesting manner with lantern slides.

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
The Toronto Astronomical Society.

—o—
Roll of Membership.
—o—

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

I, the undersigned, having been elected an Associate of THE TORONTO ASTRONOMICAL SOCIETY, do hereby promise and declare that I will be governed by the Charter and By-laws of the said Society as they are now formed, or as they may be hereafter altered, amended or enlarged; that I will advance the objects of the Society as far as shall be in my power; that I will attend its meetings as regularly as shall be possible and will take an active and abiding interest in its welfare and prosperity, and that if I become an officer thereof or a member of the Council, I will faithfully and to the best of my ability discharge the duties of the office conferred on or of the trust reposed in me: Provided, however, that whenever I shall signify in writing to the Treasurer of the Society that I am desirous of withdrawing my name therefrom, I shall (after the payment of any fees which may be due by me at that period, and after giving up in good condition any books, instruments or other property belonging to the Society, in my possession or entrusted to me) be free from this obligation.

L. H. Graham

Witness my hand, this

19th day of October 19 04

x- of Chatham. Mr. C. A. Mallory, the
y. Patron leader, is a brother.
it.

METEORITES DISCUSSED.

Interesting Lectures Before the Royal Astronomical Society.

A large audience gathered last night at the meeting of the Royal Astronomical Society of Canada in the Canadian Institute, to listen to a discussion of the origin and composition of meteorites, and to view a number of specimens of these objects. Professor De Lury spoke of their probable origin to the effect that all meteors appear to move in orbits round the sun in a similar manner to that of comets, and, in fact, many of them are thought to be remnants of disrupted comets torn to pieces by the tidal action of the huge planets, like Jupiter and Saturn.

Prof. Coleman reviewed some of the geological points involved, and thought that probably meteorites represented fairly well small portions of the earth's interior.

About 20 specimens were shown. Two from Shelburne, which fell on Aug. 13 last, were pronounced by experts present as being unusually good samples of meteorites of their class. One, 14 pounds in weight, is owned by Mr. John Shelds, of Shelburne, who was present, and explained the finding. Another, 28 pounds in weight, which fell within three-quarters of a mile of the former, is in possession of Mr. J. F. Gardner, of Toronto, an official of the Bell Telephone Company, who loaned it for the evening.

Prof. Hahn, son of the celebrated Dr. Hahn, was present, with a number of samples, and explained the methods of finding and detecting them.

Mr. Arthur Harvey dealt interestingly with the part played by meteorites in religious ceremonies.

NEWS OF THE JUNCTION.

dis-
the
ome.
s in
as a
The
orders
mon-
ctrine
of the
ence,
ks in
mon-
ous.
social-
re-
w of
reli-
to
ance,
and
point
er to
the
taly.
re-
an-
in a
dis-
arch
hat
It
sec-
nis-
and
pers
it
less
ory
med
less

b
wa
ste
pu
wa
Ce
wa
fr
ac
cif
Pe

of the

MINUTES

of a meeting of The Royal Astronomical Society of Canada, held on the 1st of November, 1904, Mr. John A. Paterson, Past President, in the Chair.

Minutes of the previous meeting were read and approved.

The following communications were read :

From Mr. Weston Weatherbe, Barrie Centre, N.Y., respecting his gift of his telescope to the Society;

From Mr. Joseph Pope, C.M.G., Ottawa, asking whether the Society intends sending an expedition to Labrador to observe the eclipse in August, 1905.

The nominations were read for the second time of Messrs. Gray, Inrig and Hall, and, on the motion of Professor DeLury, the Secretary was directed to cast a ballot for their election, and they were declared to be duly elected.

An interesting discussion took place upon matters of current astronomical and scientific interest, the expected appearance of Enck's Comet, the movements of Jupiter's satellites, etc.

The feature of the evening was an address by the President, Dr. C. A. Chant, upon "The Diffraction Spectrum, with Illustrative Experiments." Dr. Chant explained clearly the difference between the spectra produced by the use of different kinds of grating, and it was shown that the spectrum produced by the diffraction grating, being always uniform, is the best medium in determining the nature of any light. Dr. Chant's practical and interesting demonstrations were an important adjunct to his address.

C. A. Chant
Pres.

MINUTES of a meeting of Council, held at the Observatory on the 11th of November, 1904, the President in the Chair.

The Committee appointed to consider the question whether the Dominion Government should be asked to send an expedition to observe the solar eclipse on the 29th of July, 1905, reported in favour of such a request, and a resolution to that end was passed.

A discussion took place upon the subject of the issue of a Report of the Society's Transactions for the current year. It was finally decided to recommend that a Report be issued, the expenditure involved to be limited to the sum of Two hundred Dollars.

M I N U T E S

of a meeting of the Royal Astronomical Society of Canada held at the Canadian Institute, on the 15th of November, 1904, the President in the Chair.

Minutes of the previous meeting were read and approved.

Communications were read by the Secretary from :
Professor Beckerton, Christchurch, N.Z., respecting his theory of stellar impact;

Mr. W. H. S. Monck;

Mr. Robert Dewar, asking information as to the publications of the Society;

Professor Dickson, of Queen's College, Kingston, stating that an alleged meteorite found at London, Ontario, had on examination proved to be not of meteoric origin;

J. Miller Barr, St. Catharines, covering notes of his observations of a new variable, 32 Cassiopeia, which he finds shows a variation of about one-third of a magnitude in eight hours. - Mr. Barr believes the star to be an eclipse variable.

Professor DeLury addressed the Society on the subject of eclipses, explaining the method of determining their occurrence and the places most favourable for their observation. The lecture was particularly opportune in view of the approaching eclipse of August 29th, 1905.

Calhoun

Nov. 29, 1904

M I N U T E S

of a meeting of the Royal Astronomical Society of Canada held on the 29th of November, 1904, the President in the Chair.

Minutes of the previous meeting were read and approved.

Communications were read from :

Mr. Weston Weatherbee, who has presented his telescope to the Society;

The Secretary of The Owen Sound Astronomical and Physical Society, asking advice respecting the ordering of books, etc.

?
making inquiries respecting the "Shelburne meteorite."

It was proposed by Mr. Musson, seconded by Dr. Marsh, -
That Mr. F. L. Blake, D. L. S., Astronomer at the Observatory, Toronto, be elected to be a Life Member of the Society.

The Report of the Librarian showed the receipt of new photographs of the moon from Paris Observatory.

Predictions were read by Mr. Clipsham respecting Encke's Comet and an occultation of Mars on the 2nd of December

The paper of the evening took the form of a series of sketches of the work of the Honourary and Corresponding Fellows of the Society, given by Miss E. A. Dent. The paper was illustrated with portrait lantern slides.

C. F. Hunt

President

Dec. 13, 1904.

REPORT FROM COUNCIL

A meeting of the Council of the Royal Astronomical Society of Canada was held at the Observatory on the 6th of December, 1904, the President in the Chair.

The following gentlemen were named as a Committee to consider the question of adequate accommodation for the Society in the future :

- Dr. Chant,
- Mr. Paterson,
- Mr. Collins,
- Mr. Maybee,
- Mr. Musson and
- Mr. George Ridout,

with power to add the name of Professor DeLury if deemed desirable.

The nominations of Council for officers for the coming year are as follow :

Honourary President : The Honourable the Minister of Education;

President : C.A.Chant, Esq., M.A., Ph.D.;

First Vice-President : A.T.DeLury, Esq., M.A.;

Second Vice-President : Mr.W.Balfour Musson;

Treasurer : Mr.George Ridout;

Secretary : Mr.J.R.Collins;

Recorder : Miss Elsie A.Dent;

Librarian : A.Sinclair, Esq., M.A.;

Assistant Librarian : Mr.K.M.Clipsham;

Curator : Mr.Robert S.Duncan;

Members of Council :

The Reverend D.B.Marsh, D.Sc.;

The Reverend T.C.Street-Macklem,
Provost of Trinity College;

Miss Lilian M.Dent.

Mr. John Ellis nom. by Mr. J.M. Collins -

MINUTES

of a meeting of the Council of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, held at the Observatory on the 6th of December, 1904, the President in the Chair.

Present : Mr. Paterson,
Professor DeLury,
Mr. Miller,
Mr. Maybee,
Mr. Musson,
Mr. Collins and
Miss E.A. Dent.

Moved by Professor DeLury,

Seconded by Mr. Miller :

That the following gentlemen be named as a Committee to consider the question of adequate accommodation for the Society in the future :

Dr. Chant,
Mr. Paterson,
Mr. Collins,
Mr. Maybee,
Mr. Musson and
Mr. George Ridout,

with power to add the name of the mover if deemed desirable to do so;

Carried.

The List of Nominations made by Council for officers for the coming year was settled as follows :

Honourary President : The Honourable the Minister of Education;

President : C.A. Chant, Esq., M.A., Ph.D.;

First Vice-President : Professor A.T. DeLury, M.A.;

Second Vice-President : Mr. W. Balfour Musson;

Treasurer : Mr. George Ridout;

Secretary : Mr. J. R. Collins;

Recorder : Miss Elsie A. Dent;

Librarian : A. Sinclair, Esq., M.A.;

Assistant Librarian : Mr. K. M. Clipsham;

Curator : Mr. Robert S. Duncas.

Members of Council : The Reverend D. B. Marsh, D.Sc.;

The Reverend T. C. Street-Macklem,
Provost of Trinity College;

Miss Lilian M. Dent.

M I N U T E S

of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, held at the Canadian Institute on the 13th of December, the President in the Chair.

1904

Minutes of the previous meeting were read and approved.

Communications were read by the Secretary from :

J.F.Rowantheight, addressed to Mr.Stupart, asking him whether he was aware of any source from which he could borrow astronomical lantern slides;
Professor Watson, Kingston, stating that a digest of his lecture delivered to the Society last spring is being forwarded for publication in the Transactions;
Weston Wetherbee, Albion, N.Y., giving a description of and directions for using his telescope, recently presented to the Society.

A Report from Council was read, and, on the motion of Mr. Weatherbee, seconded by Mr.Graham, declared adopted.

On a call being made by the President for nominations for Members of Council, the nomination was made by Mr.Z.M. Collins of Mr.John Ellis, to be Librarian.

The nomination was read for the second time of Mr.F.L.Blake, D.L.S., as a Life Fellow of the Society, and, on the motion of Mr.Z.M.Collins, seconded by Mr.Weatherbee, the Secretary was authorized to cast a ballot, and Mr.Blake was declared duly elected.

The nomination was made by Mr.J.R.Collins and Professor DeLury of Mr.Weston Wetherbee, of Albion, N.Y., for Fellowship in the Society. The nomination was referred to Council for consideration.

The Librarian's report was read, showing recent additions to the Library.

Predictions were made by Mr.Clipsham, respecting an occultation of a Tauri on the 20th instant, and the movements of the satellites of Jupiter.

Reports of observations were given by Mr.Graham and Mr. Wetherbee, respecting a recent period of unusually active disturbances on the sun, and Mr.Musson referred to a newspaper announcement that Professor Perrine of Lick Observatory had discovered a new fissure on the moon.

A spirited discussion took place respecting the recent announcement in the newspaper press of a discovery by Mr. E.Walter Maunder relating to the coincidence in periods of solar and magnetic disturbances. The reports now state that Mr.Maunder has discovered that magnetic disturbances appear in a period of 27.1-3 days, whereas that theory was worked out by Mr.Harvey and Mr.Elvins many years ago. Mr.Elvins spoke with his old time vigour in defence of Mr.Harvey's claim to priority in the discovery.

The paper of the evening was given by Mr.D.J.Howell, upon the subject of "Recent Lunar Photography, and many fine lunar views were shown on the screen. Altogether the meeting was an unusually interesting one.

C.A. Grant

Dec. 27/04 Pres.

MINUTES of a meeting of The Royal Astronomical Society of Canada, held at the Canadian Institute on the 27th of December, 1904, the President in the Chair.

Minutes of the previous meeting were read and approved.

The Secretary reported the receipt from Harvard Observatory of bulletins giving the ephemeris of Giacobini's Comet B.

The matter of the election of members of Council was then taken up. It was reported that Mr. Sinclair, who had been nominated as Librarian, had stated that he was unable to act, and, there being no opposition, Mr. John Ellis was elected to the office.

Miss Lillian Dent having requested that her name be withdrawn from the Council List, it was moved by Mr. J. R. Collins, seconded by Mr. Clipsham, that the name of Mr. Joseph Pope, C.M.G., of Ottawa, be substituted: Carried.

The nomination was made for membership of Mr. Alexander Inrigg, by Messrs. J. R. Collins and Clipsham.

The Librarian reported recent additions to the Library.

Mr. Clipsham read predictions respecting the movements of the satellites of Jupiter, etc.

A model of the Shelburne meteorite, presented to the Society by Professor Bergstrom, of the School of Mines, Kingston, was on exhibition.

The paper of the evening was given by the President, Dr. C. A. Chant. Dr. Chant described some original investigations and experiments made by him at the University of Toronto, with a view to determining the reflectivity of highly polished surfaces of different metals, etc., and the results attained. Dr. Chant's paper will appear in the Transactions of the Society.

C. A. Chant

Jan. 24, 1905

Pres.