

The Royal
Astronomical Society
of Canada



Annual At-Home

January 10th, 1905

The Annual At Home of the Society was held on the
10th of ^{Jan} ~~February~~. This proved to be a most suc-
cessful event, there being a large attendance of the

members and their friends. Mr. W. Balfour Musson,
Vice-President, occupied the Chair.

The usual order of business was suspended, with
the exception of the reading of nominations for
membership.

The nomination was read, for the second time, of
Mr. Alexander Inrig, Toronto, and Mr. Inrig was de-
clared duly elected.

The nomination of Mr. F. J. Rounthwaite, of Brant-
ford, proposed by Messrs J. R. Collins and J. A. Pater-
son, was read ~~for the first time~~.

In accordance with the Society's custom, the
paper was given by the President, Dr. Chant, and con-
sisted of a concise review of the astronomical and
physical events and progress of the last year. The
address was a most happy one and proved to be of
the deepest interest to the audience.

At its close, the meeting was thrown open, and an
hour was spent socially, and in viewing experiments
with the Spectroscope, in charge of Mr. Miller, and
other apparatus.

James Gies
C. G. Shaw

Real Est Loan	100
Toronto Savings	100
Cable, corp. bonds	150
do. res. bonds	150
Morning sales: Ontario, 30, 10 at 131 1/2	
100 at 132; Commerce, 25 at 107; Imporia	
1 at 240; Toronto Electric Light, 170	
1000; Nicholson and Ontario Navigation,	
at 62 1/2; 7 at 62 1/2; C.P.R., 71 at 122 1/2	
11 at 120; Northern Navigation, 10 at 67 1/2	
10 at 68; 10 at 64; 10 at 65; 1 at 63 1/2	
100 at 107; Coal, 140 at 61; 25 at 60 1/2	
Dominion Steel, 25 at 107; Canada P.	

The nominations were
also read by the Revd
James R. E. St. Brady, B.S.,
of Hamilton, proposed
by Dr. Marsh, Dr.
B. P. Jenkins, and
J. J. Suel of Hamilton,
proposed by Dr. Musson,
Dr. Chant. It was moved
seconded & carried that
the usual proceedings be
suspended, & that these
gentlemen be elected
on a ballot cast by the
Secretary, & they
were declared to be
duly elected.

The President and Council
of the
Royal Astronomical Society
of Canada
cordially invite

to attend their

Annual At-Home

to be held in the

Library of the Canadian Institute,
Richmond St. East,

on Tuesday Evening,
January 10th, 1905

Chair taken at 8 o'clock.

C. A. CHANT, J. R. COLLINS,
President. *Secretary*

Programme :

President's Address on "Astronomical
and Astrophysical Progress in 1904."



Exhibits :

Spectroscopic Apparatus in Operation.
MR. A. F. MILLER

Wood's New Process of Color Photography
THE PRESIDENT

The Paris Lunar Photographs.
MR. D. J. HOWELL

Radium Spinthariscopes.
MR. J. A. PATTERSON

The 8½-inch Reflector recently presented
to the Society by Mr. Weston
Wetherbee, Albion, N. Y.

And others.

TO POPULARIZE ASTRONOMY STUDY

Proposed Arrangement
Toronto University.

A LINK WITH THE CITY

the originator of the scheme, and explain
as Home of New Department
of Study.

The study of the sun, moon, and stars is to be greatly extended and popularized in Toronto through a proposal now being worked out at the University of Toronto. Dr. C. A. Chant, lecturer in physics, is the originator of the scheme, and explained its details to The News this morning. Briefly the chief features are:

1. The present Observatory building, when vacated by Director Stupart, as agreed, is to be devoted solely to the study of astronomy and the carrying on of astronomical experiments. An effort will be made to retain the astronomical apparatus now used in the Observatory, including the large telescope, which is a very valuable one.

2. The Royal Canadian Astronomical Society, composed of members in Toronto and throughout the country, will join with the university in making its home in this building. The society will be allotted a lecture room for holding meetings, and an adjoining room for a library. In its turn it will install the instruments it possesses in the building.

3. A new graduating course in astronomy will be established at the university, to be known as the department of astronomy and physics. This course has already been sanctioned by the University Council, and will probably go into effect at the beginning of the next academic year.

4. Popular lectures on astronomy are to be delivered under the auspices of the University and the Astronomical Society for the benefit of all who wish to attend. At these lectures practical observations and experiments will be made.

IN FAVOR OF SCHEME.

Such a scheme would no doubt tend to bring the people of the city into closer touch with the work of the university. For this and other reasons all the parties interested are heartily in favor of it, and there does not seem to be any doubt that it will go through. The public have always shown a keen interest in the study of astronomy, and popular lectures on the subject which have already been given at the university have been well attended. This is not for the reason of any practical utility derived from the study, but probably on account of the appeal which it makes to the imagination. If for no other reason than curiosity people are fond of gazing at the moon through the big telescope, of tracing the rings of Saturn, or of picking out the different constellations. The idea of vastness which astronomy suggests, too, has a sense of charm about it. In its relation to other sciences astronomy combines both

ARRANGING WITH UNIVERSITY TO POPULARIZE ASTRONOMY

Royal Astronomical Society to Receive Accommodation in Return for Library and Instruments

A proposition to extend and popularize the study of astronomy at the university was announced last night by Prof. Chant in his presidential address at the annual at home of the Royal Astronomical Society of Canada in the Canadian Institute.

"It is hoped," he said, "that an arrangement between the university and the society will be reached by which the society will be given accommodation for our meetings and our library, the university to receive in return the use of the library and of our instruments. Everyone I have spoken to about the matter has expressed hearty approval of the proposal. At present fuller details cannot be given, but I believe that an arrangement will be made which will be of great advantage to the society, to the university and to the people generally."

The society has books and instruments valued at over \$10,000.

Prof. Chant, in reviewing the year of 1904 from its astronomical importance, noted among its achievements the spectrographic work of Hales, photographing layers of the sun's atmosphere below what appear to the eye; Pickering's discoveries on the moon's changes and the ninth satellite of Saturn; the sixth satellite of Jupiter discovered within the past few days; and new markings on Venus and Mars. New comets are: The Brooks, Temple, Giacobini and Borely. Russell Wallace's publication was also referred to.

Letters of regret were received from the lieutenant-governor, Premier Ross, Sir William Meredith, Hon. Richard Harcourt, Mayor Urquhart, Dr. John Hoskin, Byron E. Walker, Chancellor Wallace, and C. S. Gzowski.

Vice-President Musson presided, and very pleasant evening was spent by large number of members and friends.

MINUTES

of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, held at the Canadian Institute on Tuesday evening, the 24th of January, 1905.

Minutes of the meeting held on the 27th of December were read and approved.

Minutes of the business transacted at the annual At Home of the Society, held on the 10th of January, being the election of Messrs. Roundthwaite, J. J. Evel and the Reverend Father R. E. M. Brady, B. S., were read and approved.

A Report from Council of a meeting held on the 23rd instant was read.

Some discussion took place respecting the selection of representatives to the Eclipse Expedition to Labrador.

Mr. Atkinson respectfully dissented from the judgment of Council in choosing for this delegation only members of the Society resident in Toronto and Hamilton, to the exclusion of those resident in rural parts of the Province and elsewhere in the Dominion.

Mr. Elvins spoke in defence of the choice of representatives made.

It was moved by Mr. J. R. Collins, seconded by Mr. Elvins, that the Report from Council be received and approved of: Carried.

A letter was read from Mr. J. Miller Barr, relating to his investigations into the variability of a variable discovered by him, 32 Cassiopeia.

Council having reported favourably respecting the nomination by Messrs. J. R. Collins and DeLury of Mr. Weston Weatherbee for Fellowship in the Society, it was moved by Mr. Elvins, seconded by that the Society endorse the Report of Council, and that Mr. Weatherbee be admitted to Fellowship in the Society.

Mr. Graham inquired, to what extent the presentation of a telescope to the Society would influence the question of the propriety of conferring a Fellowship.

The President replied that, though the presentation by Mr. Weatherbee of his fine telescope to the Society may have had some influence in suggesting that the honour be conferred upon him, Mr. Weatherbee was well and favourably known for his astronomical work, and that the nomination of Mr. Collins and Professor DeLury vouched for the fact that he was a fit and proper person and well entitled to receive Fellowship from the Society.

Mr. Elvins moved that the Secretary be requested to cast a ballot for the Society in favour of Mr. Weatherbee's election, and Mr. Weatherbee was duly declared to be a Fellow of the Society.

The following nominations for membership in the Society were read :

Mr. Douglas Pettit, 76 St. Mary Street, Toronto,
proposed by Mr. Clipsham and Mr. Elvins;

Miss Lillian C. Clipsham, 15 Spencer Avenue, Toronto,
proposed by Mr. Clipsham and Dr. Chant;

Miss Sarah Lackie, 12 Markham Place, Toronto,
proposed by Dr. A. D. Watson and Mr. J. R. Collins;

Mrs. J. W. King, 321 Sumach Street, Toronto, proposed
by Dr. A. D. Watson and Mr. J. R. Collins; and

Mr. John Douglas Kelly, Swansea, Ontario, proposed by
Mr. John Ellis and Mr. J. R. Collins;

Mr. Merritt A. Brown, 17 Claremont Street, Toronto,
Barrister-at-Law, proposed by Messrs. J. R. Collins
and Clipsham.

The Assistant Librarian reported recent additions to the Library.

Predictions were read by Mr. Clipsham respecting the satellites of Jupiter, and Mr. Clipsham also reported that he had seen Borelly's recently discovered comet within a few days after the announcement of its appearance.

Mr. Howell stated that, as a result of correspondence with Mr. Ritchey, of Yerkes Observatory, Mr. Ritchey had intimated that certain photographic negatives would be sent to the Society.

The lecture was given by Professor A. P. Coleman, M.A., Ph.D., of the University of Toronto, his subject being "Mountain Building." Professor Coleman explained the geological process by which, through the contraction of the earth's interior, folds and upheavals of the face of the earth have occurred, the result of which is shown in mountain-range formations. The lecture was an exceptionally clear and interesting one, and the thanks of the audience were expressed to Dr. Coleman by the President, Mr. Elvins and Professor DeLury.

Feb. 7, 1905

C. Chant
President

The Royal Astronomical Society

of Canada.



PROGRAMME
January - March Term
1905

68

Papers and Subjects for Discussion

Session
January - March
1905

Jan. 10th—Society's Annual At-Home.

Jan. 24th—Mountain Building.

PROF. A. P. COLEMAN, PH.D.

Feb. 7th—The Astronomy of Tennyson.

JOHN A. PATTERSON, M.A., K.C.

Feb. 21—Personal Profit from Astronomical Studies

REV. R. ATKINSON, Chesley.

March 7th—The Total Solar Eclipse of August 29th,

1905. J. S. PLASKETT, B.A.,

Dominion Observatory, Ottawa

March 21—Stellar Photography.

REV. D. B. MARSH, D.Sc., F.R.A.S.,

Hamilton, Ontario

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

Associate Membership is open to everyone interested in Astronomy and Astronomical Physics.

FEE:

Gentlemen residing in Toronto, \$2.00

Ladies and Non Residents . . . \$1.00

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

The Regular Meetings are held in the Society's rooms,

CANADIAN INSTITUTE,

58 Richmond St. West,

Toronto

REPORT FROM COUNCIL.

A meeting of the Council of the Royal Astronomical Society of Canada was held at the Observatory on the 23rd of January, 1905, the President in the Chair.

Present :

Dr. Chant,
Mr. Elvins,
Mr. Paterson,
Mr. Harvey,
Mr. Stupart,
Professor DeLury,
Dr. Marsh,
The Reverend Provost Macklem,
Mr. Collins,
Mr. Ridout,
Mr. Duncan,
Mr. Ellis,
Mr. Clipsham and
Miss E.A. Dent.

Mr. Paterson reported that a deputation from the Society had, on Saturday, Jan. 21, held a conference with the Board of Trustees of the University of Toronto for the purpose, firstly, of urging that the University utilize the main building of the Observatory, upon the withdrawal of the Dominion Government from occupying it, for the teaching of astronomy and astrophysics; and, secondly, to propose that the Royal Astronomical Society be furnished accommodation in the building for its ordinary meetings and its library and instruments, the students of astronomy to have the use of the library and instruments.

A cordial reception was given the deputation and they were assured that the authorities of the University were very willing to cooperate with the Society.

The Board appointed Dr. London and Mr. Gzowski a committee, to meet a like number from the Society, to discuss details of the proposed arrangement.

On motion of Dr. Marsh, seconded by Prof. De Lury, Dr. Chant and Mr. Paterson were appointed to meet the committee of the Board of Trustees.

A form of memorial regarding the large telescope, prepared by Mr. Harvey for transmission to the Dominion Government, was discussed and referred to the committee just named for consideration, to be reported on at the

A letter was read from the Chief Astronomer at Ottawa, intimating that the Government had been pleased to accede to the Society's request that an expedition be sent to Labrador to observe the Solar Eclipse of the 30th of August next, and that the Society was invited to send six of its members to represent it on the expedition.

Moved by the Provost of Trinity College, seconded by Dr. Marsh, that Mr. Paterson be requested to draw a Resolution for transmission to the Chief Astronomer at Ottawa, in acknowledgement of the courteous treatment which the Society has received from the Government. Carried.

Moved by Mr. Harvey, seconded by Mr. Paterson, - that a cordial invitation be extended to Sir William Huggins, an Honourary Member of the Society, to accompany the Eclipse Expedition as its guest.

Carried.

Moved by the Provost of Trinity College, seconded by Professor DeLury : That it be respectfully intimated to the Chief Astronomer that it would be a gracious act on the part of the Government, and one which would be much appreciated by this Society, if an invitation were extended to the Hamilton Astronomical Society to send a representative with the Eclipse Expedition to Labrador.

Carried.

A ballot was then taken for the election of six members to represent the Society on the Expedition.

the understanding being that in case Sir William Huggins accepts the invitation to join the Society, and in case the number of the Society's representatives be not extended so as to include him, one of those now elected shall resign in his favour. The following gentlemen were then elected by ballot :

Dr.Chant;
Professor DeLury;
Dr.Marsh;
Mr.Collins;
Mr.Maybee and
Mr.Howell.

by Mr.Collins and Professor DeLury
The nomination of Mr.Weston Weatherbee, of Albion, N.Y., for Fellowship in the Society, made on the 13th of December, 1904, having been made and posted, according to the provisions of the Constitution, it was moved by Mr.Harvey, seconded by Dr.Marsh, that a ballot be now cast by the President for the presentation of a favourable report from Council to the Society for the election of Mr.Weatherbee.

Carried.

The subject of a design for a crest and official seal for the Society was discussed, and it was decided to place the matter in the hands of the President and Professor DeLury as a Committee for its consideration, the Committee to report at the next meeting of Council.

The President announced that Professor DeLury had kindly offered, to give a course of lectures to the Society, if the Society is of the opinion that such a course would ~~be of advantage to it and would~~ meet with an appreciative response from the general

public. It was moved by Mr. Paterson, seconded by Dr. Marsh, that the President and Secretary be a Committee to inquire into the subject generally, and the prospect of an attendance at such a course sufficient to justify the Society in accepting the generous offer made by Professor DeLury.

Carried.

It was suggested that the Society offer a medal for competition at the University, and it was moved by Dr. Marsh and seconded by that the President and Professor DeLury be a Committee to consider the question of cost, etc.

The meeting then adjourned.

ASTRONOMY OF TENNYSON

J. A. PATERSON ADDRESSES THE
ROYAL ASTRONOMICAL SOCIETY.

Tennyson's Acquaintance With Famous
Astronomers—A Poet of Evolution—
Believed in Other Habitable Spheres
—Wrote of the Nebular Theory.

Mr. John A. Paterson, K.C., delivered his annual address before the Royal Astronomical Society Tuesday night in the Canadian Institute, choosing for his subject "The Astronomy of Tennyson."

Tennyson, said the speaker, although presenting various points of view in his poems, the ethical, the emotional, the religious, the Divine sovereignty, was pre-eminently a nature poet, open-eyed and prophet-visioned. He met and talked with the great astronomers of the day. He was familiar with Rev. Chas. Pritchard, professor of astronomy at Oxford, and worked with him at astronomy and geology. He also knew Prof. Adams of Neptune fame, and had the privilege of making observations through the telescopes Adams used. Tennyson's cosmogony was accurate and modern. Before Darwin, or Wallace, or Huxley had reached the minds of ordinary men, this poet had touched the philosophy of evolution, by the magic hand of his poetry and justified Wordsworth's prefiguration of a time when the poet would lend his divine spirit to aid the transforming of science from the dry bones of the laboratory, to a form of flesh and blood.

Although an evolutionist, he was far from being a materialist, and believed that the spiritual force called "life" was the maker of organism, and not the creature of organism. Quotations from his poems were given illustrative of this. Passages were read illustrative of his hope, or perhaps belief, that there were other habitable and inhabited spheres possessing ranges of vast unlimited differences in the development of man. Shakespeare and others of the Elizabethan era had never reached that.

His knowledge of the nebular theory was also pointed out, and extracts from his poems were offered as proof that he had reached a fairly accurate knowledge of that theory as presented in his day, and not only did he know the nebular theory, but he wrote most eloquently and beautifully of star clusters, the snow-capped poles of Mars (which, by the way, in his day he called moonless, but since 1877 not so). There were references also to the nebula of Orion and the double stars. In this connection were quoted passages from "In Memoriam" and "The Princess."

Tennyson also seemed to have had a knowledge of the theory of the "Impact of stellar masses," whereby systems of worlds grow old, and after aeons of decrepitude grow cold, and then these masses, by the force of gravity, with fierce velocity, collide, and again a glowing nebula is reformed, to pass again through all the gradations of its life till other planetary systems are again formed. Whether this be true or not, it naturally attracted the poetic insight of the laureate.

Tennyson realized fully the personal insignificance of man in the universe, but at the same time his spiritual significance.

MINUTES of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, held at the Canadian Institute, on the 7th of February, 1905, the President in the Chair.

Minutes of the last meeting were read and approved.

Mr. Musson stated that he considered that the recent election of Mr. Weston Weatherbee as a Fellow of the Society was unconstitutional, and suggested that the matter be re-considered by Council.

Communications were read from :

Mr. W. F. King, of Ottawa.

Mr. Yenville, of Dorchester, Mass., confirming the observations of Mr. J. Miller Barr respecting a new double.

Mr. J. S. Plasket, Ottawa, respecting proposed arrangements for the Eclipse Expedition to Labrador.

The nominations were read for the second time of Messrs. Douglas Pettit, John Douglas Kelly, and Merritt A. Brown; Mrs. J. A. King; Miss Lillian Clipsham and Miss Sarah Lackie.

Moved by Mr. Hamilton, seconded by Mr. Paterson, and carried: That the Secretary cast a ballot for the Society for the election of all the candidates.

The President declared the candidates to be duly elected members of the Society.

The following nominations were made :

Mrs. Charles Moss, 547 Jarvis Street, Toronto, proposed by Dr. Chant and Professor DeLury;

Mrs. James Loudon, 83 St. George Street, Toronto, proposed by Dr. Chant and Professor DeLury;

Miss L. Mary Evans, 226 Jarvis Street, Toronto, proposed by Dr. Chant and Professor DeLury.

The Librarian's Report was read.

Predictions and reports of recent observations were made by Mr. Clipsham.

The lecture was given by Mr. John A. Paterson, Past President of the Society, upon the subject of "The Astronomy of Tennyson." The large audience which had gathered had an especially delightful address, the subject being one in which, from both scientific and poetical standpoints, Mr. Paterson is an enthusiast. Notes of the lecture are attached.

Alfred DeLury
Chair

HOMESTEAD REGULA

of even-numbered section
lands in Manitoba or the
territory, excepting 8 and 26
which have been homesteaded or reserved
for wood lots for settlers, and
excepting 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

ENTRY.

entry may be made person
land office for the
the land to be taken is
homesteader desires, he
son to the Minister of t
ra; the Commissioner o
Winnipeg, or the local ag
ct in which the land is
authority for someone t
or him. A fee of \$10 is
estead entry.

HOMESTEAD DUTI

ettler who has been gra
or a homestead is requi
ions of the Dominion I
he amendments thereto,
nditions connected ther
f the following plans :—
At least six months' r
and cultivation of the la
during the term of three
practice of the Depart
a settler to bring 15 a
ation, but if he prefers h
e stock; and 20 head of
ually his own property,
or their accommodation,
instead of the cultivati
if the father (or mothe
is deceased) of any par
e to make a homestead
e provision of this ac
a farm in the vicini
ntered for by such pe
eud, the requirements
esidence prior to obtai
e satisfied by such pers
the father or mother.
If a settler was entitl
ed entry for a second
quirements of this Act
prior to obtaining pater
ed by residence upon
eud, if the second hom
ity of the first homest
f the settler has his
esidence upon a farm
by him in the vicini
eud, the requirements of
esidence may be satisfie
on the said land.
The term "vicinity" used
to indicate the same to
an adjoining or corner

ler who avails himself o
f Clauses (2), (3) or (4)
acres of his homestead
9 head of stock, with
accommodation, and
acres substantially fence
privilege of a second ent
law to those settlers
d their duties upon t
d to entitle them to pat
e 2nd June, 1880,
homesteader who falls t
quirements of the h
ble to have his entry c
and may be again thre

PLICATION FOR PATE

made at the end e
ora the Local Agent, Si
Homestead Inspector,
plication for patent
give six months' notice
e Commissioner of t
Ottawa of his intention.

INFORMATION.

ROYAL ASTRONOMICAL SOCIETY
OF CANADA.

A Council Meeting of R.A.S.C. was held
in the Observatory on Feb 12th at 8 o'clock
President in the Chair

Present
Mr Church
Mr Ellis
Mr Mason
Mr Ridout
Mr Collins

The minutes of last meeting was read

A report was received from the Committee having
prepared arrangements with the University in charge
they reported progress and handed in with slight
various, which met the views of the University authorities

The Honorary Secretary paying the Dominion Government

£7 in the event of the Paleontological Observatory
to leave the receipts in the present building

This was authorized to be forwarded to Ottawa

The matter of a Red ~~and~~ in the society was discussed
The Embellishes having the matter in hand ~~not~~ having
made a selection as yet

The Honorary Secretary regarding the legality of the
election of Mr Weston H. ~~to~~ a Fellowship in
the society was discussed. It was pointed out that
the procedure was entirely regular and in

entire accord with the provisions of the Constitution
for such cases

As the Treasurer's request - a committee consisting
of the President, the Treasurer and the Secretary was
appointed - it formulated at as early a date as
possible - a list of the Society's assets in ~~the~~ ~~the~~
particulars to which other calculations - and report to the
Treasurer ~~came~~

Mr Collins

MINUTES

of a meeting of the Royal Astronomical Society of Canada held at the Canadian Institute on the 21st of February, 1905.

In the absence of the President, Professor A.T. DeLury, Vice-President, took the Chair.

Minutes of the previous meeting were read and approved.

Communications were read from :

Dr. Wadsworth, of Simcoe;

Mr. Weston Weatherbee, of Albion, N.Y., thanking the Society for his election as a Fellow;

Professor of Tufts College,
Boston, Mass.

Mr. W.H.S. Monck, Dublin, Ireland;

Professor Bergstrom, Kingston;

Professor Beckerton, Christchurch, N.Z., respecting his theory of stellar impact.

Dr. Alfred Russell Wallace, sending an Appendix to his work Man's Place in the Universe.

Sir William Huggins, expressing his regret that he is unable to accept the Society's invitation to join its Eclipse Expedition to Labrador in August.

Report from Council was read and adopted.

The nominations for membership were read for the second time of :

Mrs. Charles Moss;
Mrs. James Loudon and
Miss L. Mary Evans.

Moved by Mr. Collins, seconded by Mr. Elvins and carried :
That the Secretary cast a ballot for the Society for the election of all candidates.

And they were declared duly elected.

The following nominations were read for Fellowship in the Society :

F.R.S.C.,
Mr. Arthur Harvey, proposed by Miss E.A. Dent and Prof.
A.T. DeLury;

F.R.S.C.,
Mr. R.F. Stupart, proposed by Mr. Andrew Elvins and
Mr. R.S. Duncan;

C.A. Chant, M.A., Ph.D., proposed by Mr. J.R. Collins
and Professor A.T. DeLury.

The Librarian's Report was read.

Various notes of current interest were contributed by Mr. Collins and others.

The paper, on Personal Profit from Astronomical Studies, by the Reverend Robert Atkinson, was read by Professor DeLury, Mr. Atkinson not being able to be present. The paper was an interesting personal testimony to the stimulation received by the writer, in common with many other men whose lives are spent in other pursuits, from the study of the heavens.

C. A. B. Hunt

March 7, 1905

M I N U T E S

of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, held at the Canadian Institute on the 7th of March, 1905, the President in the Chair.

Minutes of the previous meeting were read and approved.

Communications were read from :

The Minister of Marine and Fisheries, acknowledged the receipt of the request of the Society that the Observatory telescope be not removed, and stating that the subject of donating the instrument to the Society would receive consideration in due course.

The Librarian's Report was read.

The lecture was given by Mr. J. S. Plaskett, of the Dominion Observatory at Ottawa, who is in a large measure charged with the direction of preparations for the work to be undertaken by the Government Expedition to Labrador to observe the Solar Eclipse on the 30th of August next.

Mr. Plaskett described in a most interesting manner the various classes of observations to be made and, with the aid of lantern slides, the apparatus to be employed. The work of the representatives of the Society who will accompany the Expedition will be arranged so as to be in general harmony with that of the Expedition as a body.

A large audience attended the lecture, and appreciative remarks were made by several of the members at its close.

Mar. 21, 1905

C. A. Hant
President

MINUTES of a meeting of the Royal Astronomical Society of Canada, held at the Canadian Institute on the 21st of March, 1905, the President in the Chair.

Minutes of the previous meeting were read and approved.

Communications were read from :

Mr. J. Miller Barr, St. Catharines, covering a short paper on the subject of "Helium Stars."

The Honourable the Minister of Public Works.

The Reid Steamship Company of Newfoundland, respecting arrangements for conveying passengers to Labrador at the time of the solar eclipse in August.

The Revd. J. T. W. Claridge, F.R.A.S., Burton-on-Trent, England, making inquiries respecting the Society's Transactions for 1904.

A Memorial Card was also read, announcing the death of Dr. Wadsworth, of Simcoe, for many years a member of the Society.

It was moved by Professor DeLury, and seconded by Mr. Graham, That the President, the Secretary, Mr. Stupart and Mr. Musson be a Committee to prepare a suitable Resolution to be forwarded to Mrs. Wadsworth, expressing to her and her family the sympathy of the Society. Carried.

Bulletins Nos. 179 and 180 of Harvard College Observatory were read.

The following nominations for membership were made :

Arthur Law Grant, Esquire, Metallurgist, 1081 Queen Street, West, Toronto, nominated by Messrs. Collins and Musson.

Mr. Clarence Bell, Law Clerk, Osgoode Hall, Toronto, proposed by Messrs. Howell and Elvins.

The Reverend H. O. Tremayne, Rector of St. George's Church, Lambton Mills, proposed by Messrs. Howell and Chant.

Mr. Percival B. Jarvis, 89 Glen Road, Toronto, proposed by Messrs. Hamilton and Collins.

Mrs. Laila C. Jarvis, 89 Glen Road, Toronto, proposed by Messrs. Hamilton and Collins.

Miss Sara E. Hagarty, 33 Harbord Street, Toronto
Miss Menelly, 31 Harbord Street and
Miss Isabel Forrest, 31 Harbord Street,
proposed by Dr. Chant and Miss E. A. Dent.

The Librarian's Report was read.

Mr. Weatherbe reported his recent observations of sunspots, and gave an interesting account of a recent visit made by him to the Naval Observatory at Washington.

Mr. Stupart referred to the large sunspot of the 4th of February last, and stated that an unusual magnetic disturbance was recorded at the Observatory at that time, and that after a period of twenty-seven days and four hours had elapsed and the spot was again visible, a repetition of the disturbance was recorded.

Dr. Marsh asked that the members observe the crater Cassendi, the wall of which he finds unbroken.

The paper given by Dr. Marsh was upon the subject of his own experiments with lunar photography. Slides were shown of the results attained, and his experience with the use of different photographic methods, plates, was discussed. Dr. Marsh was congratulated by several of the members upon the success which he had achieved in this line of work.

April 4, 1900

C. A. Hunt
President

MINUTES

of a Meeting of the Royal Astronomical Society of Canada held at the Canadian Institute on the 4th of April, 1905, the President in the Chair.

Minutes of the previous meeting were read and approved.

A communication was read by the Secretary from Mr. J. Miller Barr, with notes on the colours of stars.

Mr. Musson commented on Mr. Barr's letter, expressing the pleasure of the Society in receiving his communications, and its appreciation of the importance of his work.

A Report from Council of a meeting held on the 27th of March was read.

Moved by Mr. Musson, seconded by Mr. Graham, that the Report be received and adopted.

Carried.

Nominations of the following persons for membership in the Society were read for the second time :

Mr. Arthur Law Grant;
Mr. Clarence Bell;
The Reverend H. O. Tremayne;
Mr. Percival Jarvis;
Mrs. L. C. Jarvis;
Miss Sara E. Hagarty;
Miss Meneilly;
Miss Isabel Forrest;
~~Mrs. C. A. Chant.~~

It was moved by Mr. Clipsham and seconded by Mr. Collins that the Recorded be directed to cast a ballot for all candidates, and they were declared elected.

The following nominations for Fellowship in the Society, having passed through the procedure called for by the Constitution, were read for final disposition*:

Mr. Arthur Harvey, F.R.S.C.,
Mr. R. F. Stupart, F.R.S.C.,
Mr. C. A. Chant, M.A., Ph.D.

Moved by Mr. Graham, seconded by Mr. Howell, that the Secretary cast a ballot in favour of the election of the three candidates.

The following new nominations for membership were read :

Mr. Arthur Thomson, B.A., University College, Toronto;
Mr. G. Woodall, 8 Plymouth Avenue, Toronto;
Mr. Robert Mackie, 9 Wright Avenue, Toronto;
Mr. William Bain, Toronto,

Proposed by Dr. Chant and Miss E. A. Dent.

Mr. John Marr, 220 Pacific Avenue, Toronto Junction;
Mr. John Dearness, M.A., Normal School, London,

Proposed by Mr. D. J. Howell and Dr. Chant

Mrs. C. A. Chant, proposed by Professor DeLury and Miss E. A. Dent.

The Report of the Librarian was read.

Mr. Graham and Mr. Clipsham reported observations of a display of Aurora on the evening of April 1st.

Mr. Howell reported having observed a bright meteor on the evening of the 2nd of April.

Mr. Graham asked whether a course of work could be arranged for the benefit of new members.

The paper set for the evening was by Mr. Arthur Harvey, upon the subject of Solar Spots and Magnetic Storms in 1904. It was announced, however, that on account of Mr. Harvey's serious illness a change in the programme had become necessary, and that Mr. Harvey had sent word to the Society that he expected to have his paper ready about the middle of May. The remainder of the evening was therefore spent in viewing some fine lantern slides made by Mr. Howell from the Paris charts of the moon, while Mr. Elvins made explanatory comments upon them.

C. Chant

Toronto, April 18th, 1905.

President.

He explain-
ed that light waves are undulations or waves in the all-pervading ether, somewhat akin to waves on the surface of water, that travel with the greatest velocity in free ether, or what is usually termed a vacuum, but are retarded in their passage through transparent matter in proportion to the density of the material. It was stated the reason a convex lens brings light to a focus is that the light travels faster in air than in the glass, and the wave front of the light is accordingly changed or curved and concentrated to or from a central point, or as the lens is convex or concave.

Dr. Chant exhibited for the first time in Toronto a telescope without a lens, constructed at Toronto University under instructions by Prof. Wood, of Johns Hopkins University, Baltimore, who had invented it. In place of lenses plain pieces of glass, called zone plates, were inserted. These plates had a coating of some opaque substance upon one surface, and the coating is scratched away by fine circular lines surrounding the central point of the glass in such a way as to be equal wave lengths of light apart, and the light passing through the zones is focussed by what is known in optics as diffraction. Two of these instruments were exhibited, which enlarged objects at a distance just as a lens telescope will do, though less efficiently. Dr. Chant stated that these instruments are at present regarded as being most useful, in that they demonstrate the truth of the wave theory of light, as they brought the light to a focus just as the theory demanded they should.

MINUTES

of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, held at the Canadian Institute, 18th April, 1905, the President in the chair.

Minutes of the previous meeting were read and approved.

Reference was made by the President and Mr. Elvins to the death of Mr. Arthur Harvey, and it was moved by Mr. Collins, and seconded by Mr. Graham, that the President and Mr. Musson be a Committee to draw a Resolution expressing to Mr. Harvey's family the deep sympathy of the Society.

A Communication was read by the Secretary from Mr. D.E. Hudson, Alton, Iowa.
Hudson, Alton,

The death was reported by Mr. Elvins of Mrs. Fletcher, for many years a member of the Society.

The nominations were read for the second time of :

Mr. Arthur Thomson;
Mr. G. Woodall;
Mr. Robert Mackie;
Mr. William Bain;
Mr. John Dearness;
Mr. John Marr, and
Mrs. C.A. Chant.

Moved by Mr. Clipsham and seconded by Dr. Marsh that the Recorder be directed to cast a ballot for the election of all candidates. Carried.

The candidates were declared by the President to be duly elected.

The nominations were read for the first time of :

Miss McKim, 25 Grosvenor Street, Toronto;
Miss M. Gunn, 35 Braedalbale Street, Toronto, and
Miss McMaster, 132 Bleecker Street, Toronto,
all proposed by Miss E.A. Dent and Mr. Andrew Elvins.

The Report of the Librarian was read.

Bulletins were read from Harvard Observatory, respecting the ephemeris of Comet Giacobini A, and changes reported by Professor Lowell on the surface of Mars.

Mr. Graham reported an observation of a beautiful and peculiar phenomenon, consisting of a series of colours on the evening sky after sunset, which appeared from the order in which one colour tone followed another to be a vast prismatic effect spread on the heavens from east to west.

Owing to the illness of Professor Kirschmann, the lecture announced to be given by him, upon the subject of "Life in Other Worlds," was postponed until the autumn. The President was good enough to fill the vacancy, by a most interesting address upon the subject of the principles underlying the construction of lenses. Notes are attached hereto.

MINUTES of a meeting of THE ROYAL ASTRONOMICAL SOCIETY
OF CANADA, held at the Canadian Institute on the 2nd of
May, 1905, the President in the Chair.

The meeting was held in the Institute library, in order to accommodate the large audience which had gathered to hear Dr. Klotz, the lecturer of the evening, and the usual order of business was suspended as far as possible.

The following nominations for membership were read for the second time :

Miss McKim;
Miss McMaster and
Miss Gunn;

and on the casting of a ballot by the Secretary the candidates were declared duly elected.

The following nominations for membership were read for the first time :

Miss Jessie Fraser, 58 Palmerston Avenue, Toronto;
Miss Nellie O'Neill, 49 Robinson Street, Toronto;
Miss Florence Smith, 557 Delaware Avenue, Toronto;
Miss C. Donovan, 57 Alice Street, Toronto;
Miss L. W. Brooking,
Mr. Thomas Parker, 43 St. James Avenue, Toronto;
Mrs. Flora McD. Denison, 22 Carlton Street, Toronto;
Dr. Augusta Stowe Gullen, 461 Spadina Avenue, Toronto,
all candidates being proposed by Dr. Chant
and Miss E. A. Dent.

A Harvard College Observatory Bulletin was read, announcing the discovery at that Observatory, by Professor W. H. Pickering, of a tenth satellite of Saturn.

The lecture given by Dr. Otto J. Klotz, Astronomer, of the Department of the Interior, Ottawa, was upon the subject of "Longitude Determination in the Pacific." The address was of the deepest interest, and included not only an account of the scientific work performed, but a delightful description of the lecturer's experiences in the southern seas, illustrated with numerous lantern slides from his own photographs.

Toronto, May 16th, 1905.

Alfred J. Schury
Vice - President.

fo:

and

di

fo:

Royal Astronomical Society.

A large audience greeted Dr. Klotz of the Department of the Interior, Ottawa, at the rooms of the Royal Astronomical Society last night. The technicalities of the astronomical observations necessary for determining exact longitude were explained. The completion of the Pacific cable gives an astronomical girdle of the earth, and enables different observers simultaneously to determine the time to a portion of a second at widely separated stations, a necessary condition to judge with accuracy the true longitude of that part of the earth. Dr. Klotz and Mr. Werry found that a message travelled from Vancouver to Fanning, a distance of 4,000 miles, in one-third of a second. The "personal equation" of the observers has to be allowed for when recording very short periods of time. No two men will work their instruments in the same time; one will be quicker or slower than the other, and this has to be allowed for. Dr. Klotz gave the audience a delightful account of his trip while engaged on these observations, describing with the aid of lantern slides made from photographs taken by himself the effect of civilization upon the natives of the South Pacific, New Zealand, and particularly Fiji. Dr. Chant occupied the chair.

The Royal
Astronomical Society
of Canada



PROGRAMME

April-June

1905

Papers and Subjects for Discussion.

Session: April-June, 1905.

April 4:

Solar Spots and Magnetic Storms of 1904.
ARTHUR HARVEY, F.R.S.C.

April 18:

Life in Other Worlds.
Professor A. KIRSCHMANN, Ph.D.

May 2:

Longitude Determination in the Pacific.
O. J. KLOTZ, LL.D., Ottawa, Ont.
(Open meeting with lantern illustrations)

May 16:

Achievements of Nineteenth Century Astronomy.
L. H. GRAHAM, B.A.

May 30:

The Cause of Weather Changes.
ANDREW ELVINS.

June 13:

The Figure of the Earth.
JOHN R. COLLINS.

June 27:

Open Air Meeting at the Observatory.

Notes.

Free discussion is allowed on each paper and on other timely subjects, and often is a very interesting feature of the evening.

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

Associate Membership is open to every one interested in Astronomy or Astronomical Physics.

FEE:

Gentlemen residing in Toronto \$2.00
Ladies and non-residents - - 1.00

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

The regular meetings are held in the Society's rooms in the

CANADIAN INSTITUTE,
58 Richmond St. West,
Toronto.

M I N U T E S

of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA,
held at the Canadian Institute, on the 16th of May, 1905.

In the absence of the President, Professor A.T. DeLury,
Vice-President of the Society, took the Chair.

Minutes of the previous meeting were read and approved.

Communications were read from :

Professor Luis G. Leon, of ^{the} the Astronomical Society of Mexico, expressing his regret for the death of Mr. Arthur Harvey, and sending fifty copies of his work on the planets in 1905;

Dr. Otto Klotz, Ottawa, complimenting the Society upon the excellence of its Transactions for 1904;

Mr. W.H.S. Monck, F.R.A.S., Ireland, referring to the death of Mr. Harvey;

Mr. D.E. Haddon, Alta, Iowa, reporting his methodical observations of sun-spots during 1904.

The nominations were read for the second time of the following candidates for membership.

Miss Nellie O'Neill;
Miss Jessie Fraser;
Miss Florence Smith;
Miss C. Donovan;
Miss L.W. Brooking;
Mr. Thomas Parker;
Mrs. Flora McD. Denison, and
Dr. Augusta Stowe Gullen.

It was moved by Mr. Collins and seconded by *J. Graham* and carried : That the Recorder be directed to cast a ballot in favour of the election of all candidates, and they were declared duly elected.

The nomination for membership was read, for the first time, of Dr. Wilfred Grenfell, of Labrador, proposed by Messrs. D.J. Howell and J.R. Collins.

The Librarian reported recent additions to the Library.

Notes of general interest were contributed by Mr. Collins.

The paper, given by Mr. L.H. Graham, B.A., dealt with the Achievements of Nineteenth Century Astronomy. Mr. Graham gave a rapid sketch of the growth of astronomical science up to the dawn of the nineteenth century, and then traced the development of its radiating branches during the last hundred. The paper bore evidence of much careful research and was a most useful epitome of a many-sided subject.

C. A. Grant
May 30, 1905
President

1905

Minutes of a meeting of the Royal Astronomical Society held in the Canadian Institute on May 3
Dr. Chant in the chair.

As ill-health prevented Mr. Elvins from giving his paper on "The Cause of Weather Change" Mr. Stupart consented to take his place, and traced as far as known generally the cause of such changes. Mr. Stupart stated that now the telegraph enabled meteorologists to trace and mark great cyclonic storms in advance as they approached any portion of the earth's surface.

Dr. Chant gave a very interesting account of his trip of inspection of several of the astronomical observatories of the United States.

The minutes of the last meeting were read and confirmed.

Dr. Wilfrid T. Grenfell was elected an Associate of the Society.

The Librarian reported recent additions to the Library.

Mr. Graham drew attention to the color which had appeared to him as a spectrum of the sunset which was spread across the sky from west to east.

[Notes by J. R. Collins].

C. Chant,
June 13, 1905, President.

The Regular Meeting of the Royal Astronomical Society
June 13/05 - President Mr. Chauv. in the Chair

The minutes of the last meeting was read and approved.

Communications were reported from Secretary Bantley, American Astronomical Association in regard to report of associated society. - ^{requesting} ~~requesting~~ ^{copy of} ~~copy of~~ ^{publications} ~~publications~~ acknowledgements also receipt of report from Howard Crosby etc.

The Librarian report -

Observer report on Mars - by Mr. Maxey Mr. Graham ^{in the Chair} Mr. Collins. Mr. Graham reminded the members that Mars has at this time stopped his westerly movement and began moving eastward on account of the compound motion of the planet and the earth.

Paper from J. Muller Bonn St. Catharines on new variable stars

Paper of the evening by Mr. Collins on the figure of the Earth -

C. A. F. Chandler

Oct. 17, 1905.

President

June 27/05
 Open Air Meeting
 weather unfavorable

Papers and Subjects for Discussion.

Session: October-December, 1905.

Meetings begin at 8 p.m.

- October 3:**
 The Expedition to Labrador to Observe the Total
 Solar Eclipse of August 30, 1905.
 C. A. CHANT, President.
(With lantern illustrations)
- October 17:**
 Stellar Legends of the North American Indians.
 J. C. HAMILTON, M.A., LL.B.
 An Explanation of the Harvest Moon.
 J. EDWARD MAYBEE, M.E.
- October 31:**
 Life in Other Worlds.
 Professor A. KIRSCHMANN, Ph.D.
- November 14:**
 New Variable Stars.
 J. MILLER BARR, St. Catharines.
- November 28:**
 Stellar Motions.
 A. F. MILLER.
- December 12:**
 Stellar Classification.
 W. BALFOUR MUSSON.
- December 26:**
 Annual Meeting.
 Results of Expeditions to Observe the Eclipse of
 August 30, 1905.

PLACE OF MEETING.

During October the meetings will be held in the Chemical Building of the University of Toronto; in November and December they will be in the new quarters of the Canadian Institute, 198 College Street, (just south of the Chemical Building).

NOTES.

Free discussion is allowed on each paper and on other timely subjects. This often is a very interesting feature of the evening.

The Society publishes its transactions, and has a library open to its members.

Associate Membership is open to every one interested in Astronomy or Astronomical Physics.

FEE:

Gentlemen residing in Toronto \$2.00
 Ladies and non-residents - - 1.00

(1)

Oct. 3, 1905

The first regular meeting of the Royal Astronomical Society of Canada for the autumn session was held on Tuesday, Oct. 3, in the Chemical Building of the University of Toronto, Professor De Lury, first vice-president, being in the chair. There were about 300 present.

The reading of the minutes of the last meeting was deferred until the next meeting.

The following candidates were nominated for associate membership:-

By C. A. Chant and A. T. De Lury:

Rev. J. J. Kavanagh, S. J., Montreal, Que.
 Walter E. Lyman, B. A., Montreal, Que.
 Louis Gauthier, C. E., Ottawa.
 John Macara, "
 John S. Plaskett, B. A., "
 Louis B. Stewart, S. P. S., Toronto;
 Alfred S. Johnston, B. A., Chicago;
 James A. Russell, Windsor, N. S.
 W. Percy Near, B. A., St. Mary's.
 Rev. C. P. Choquette, M. A., St. Hyacinthe, Que.
 Charles Upton, Gloucester, Eng.
 Frank B. Jennings, Derby, Eng.
 George S. Buntingham, Massey, Ont.

By J. R. Collins and C. A. Chant:

Miss Anna E. Falls, Simcoe, Ont.
 Eric E. Wells, Toronto.

(2)

By D. J. Howell & A. Elvine

Dr. A. R. Abbott, Toronto.

In appropriate terms Mr. John A. Paterson, K. C., referred to the great loss sustained by the Society in the death of our former president Dr. Larratt W. Smith; and, seconded by Mr. A. Elwin, moved the following resolution, which was carried.

The Royal Astronomical Society of Canada desires to record its sense of the very great loss it has sustained through the death of its Past President, Larratt William Smith, D.C.L., LL.D. Our best interests were under his most constant care, which he evidenced not only by his generosity to us in gifts of valuable Books and Instruments, but also by his personal services as President and Member of the Council for so many years, and by his careful regard of our Scientific and Literary interests. Service by dead substance is silver, but service by living self is golden. In his passing we lose a man of earnest apprehension of duty, a Scientific Student, and a most courteous and kindly gentleman.

We venture to express our deep sympathy with his bereaved family, and trust that the Giver of all good may pour upon them plentiful benedictions, and in His own good time change their mourning into joy.

It was ordered that the resolution be engrossed and presented to the family of the deceased.

A Communication from Harvard Coll. Observatory regarding the new star in Aquilae was read. Prof. Léon of Mexico wrote asking for results of the eclipse expedition - Prof. Bruckston of Christchurch, New Zealand, wrote requesting some members to interest themselves in certain features of his work on Taltan impact. W. H. S. Mouch wrote giving supplementary entries for his catalogue on Aerolites. J. S. W. Shearnan wrote that he was the government observer at Vancouver, B. C., and asking for our publications.

(4)

The programme for the evening consisted of an account by the President of the recent expedition sent out by the Canadian Government to Labrador to observe the total solar eclipse of Aug. 30, 1905. It was illustrated by about 120 lantern slides from negatives taken by Messrs. Plaskett, Neave, Mayhew and Howell, and gave an excellent view of the trip and of the experimental equipment which had been prepared for the occasion -

C. A. Hart

President.

Oct. 17/1905

October 17th 1905.

The Royal Astronomical Society of Canada held its regular meeting in the Chemical Building of the University of Toronto, the President in the Chair -

Minutes of the two last previous meetings were read & confirmed.

Report from Council read by Mr. Collins who had acted as Secretary.

The nominations were read for the second time of -

Rev. J. J. Moranagh.

Rev. C. P. Choquette

W. E. Lyman.

Louis Gauthier

John Macara

Dr. S. Plaskett.

Louis B. Stewart.

Alfred S. Johnson.

Jos. H. Russell.

W. Percy Near.

Frank P. Jennings

Chas Lepton.

Geo S. Buckingham.

Eric E. Wells.

Dr. A. R. Abbott.

Miss Rhina E. Falls.

Moved by Mr. Hamilton, seconded by Mr. Collins that the President cast a single ballot for the election of all candidates, & they were declared to be duly elected.

INDIANS HONOR THE STARS IN LEGENDS OF GENERATIONS

Knowledge of Astronomy on Part of
Various Tribes Dates Back Hun-
dreds of Years.

At the meeting of the Royal Astronomical Society on Tuesday evening, J. C. Hamilton, M.A., LL.B., read a paper on "Stellar Legends of the American Indians," which created so much interest that other local associations have asked to hear it repeated.

Mr. Hamilton referred to the general existence of "medicine" or mystery among the red men. "The medicine man," he said, "is trained in his youth to memorize, and to fast for days at a time, when he has visions and communes with the Great Spirit. His memory thus becomes very capacious and retentive, and by these men old legends are carried down thru generations. The lecturer gave instances of remarkable relations of old myths, but confined his remarks to those regarding celestial objects, especially the Seven Stars known as the Pleiades. The Aztecs, or ancient Mexicans, in a national festival kindled the sacred fire as the Pleiades approached the zenith. So also did the Tuscayans of the southwestern plains. The Arapahoes, Peruvians, Kiowas and Yuncas regarded this constellation with reverence. The Adipones of Brazil and some other nations claim that they sprung from the Pleiades. In California it was deemed calamitous to look at them heedlessly."

Indians and Astronomy.

The origin of the North American tribes and their notions of astronomy and religion were discussed. The Salishans of British Columbia say they came from Asia in the thirteenth century. The Algonquins, including the Blackfeet, Bloods, Ojibways, Crees, Ottawas and other tribes found north of the great lakes, preceded them 600 years in their crossing to America.

The legends are not easy of classification. The Cherokees of North Carolina have as distinct stellar myths as have our natives on the Pacific slope. Towards the Atlantic the long contact with European customs and religion has caused the Micmacs and other tribes there to forget many old myths. The Micmac word for Indian, Ellenu, reminds one of the Greek Hellen. Their language is also full of compound words of many syllables, and, as Cotton Mather said, some words looked as if they had been growing since the confusion of Babel. There were doubtless, said Mr. Hamilton, two or more streams of early migration from north and south, which sometimes met. It was in South America that the cult of the Pleiades was most highly developed. Here this most wonderful group was watched with constant interest and homage. It marked their seasons, the time to sow and to reap, and their most important feasts and ceremonies.

Twinkling Stars and Dances.

The ceaseless twinkling of these stars suggested dancing. They were sometimes called the singers, just as in classic poetry we read of the "Chorus of the Pleiades." Canadian Indian legends were then considered seriatim, commencing with the Blackfeet, who

called the Pleiades "The Seven Perfect Ones." Crowfoot, the great Blackfoot chief, claimed that his people came originally from the south. Myths of the Hydahs and other far western tribes were discussed, some of whom worship the sun and moon. Many of these myths have a similarity to Greek legends, the more simple in thought and construction, as may be expected from such races.

Among the Crees and Ojibways, a common name for the group was the Fisher stars, from a fancied resemblance to that animal. Many of their stories have counterparts among the Cherokees of North Carolina and more southern nations. Imagination was affected by the surroundings. The Arabs called the Pleiades a band of riders on camels; the Germans used an ancient term, the "hen and chickens"; the Carrier Indians styled them a "herd of Cariboo"; the Eskimos "a number of dogs pursuing a bear," and the finer Creek sense made them the "garden of Hesperides," or "Isle of the Blest." Persian imagination made them a cluster of twinkling jewels, a term borrowed by Tennyson. Many beautiful illustrations were given, gathered from various parts of North and South America. A Hydah tradition tells of seven giant brothers, who while fishing harpooned a great monster, who dragged their vessel swiftly over the ocean, towards a whirlpool, where death awaited them, but as they drew near the rope broke, the whale sank into the ocean, but the impetus given was such that they sailed over up to the sky and became the Pleiades.

Back to Hiawatha.

The same story is also to be found in northern part of California, where the seven adventurers were called the Holgates. We are told of Hiawatha: "Many things Nokomis taught him, of the stars that shine in heaven." Longfellow informs us that the stories woven into this Indian Edda were mostly taken from Mr. Schoolcraft's "Algon Researches of the Stellar Myths so compiled." "Osseo, son of the Evening Star," is stated by Mr. Schoolcraft to be Algonkian. But Longfellow, no doubt obtained some legends at first hand from Canadian Red men themselves. Of these Bukjinene, the Garden River Chief, son of Shinwauk, and grandson of Shinguacose, from whom an Ontario township is named, must not be forgotten. Shinguacose, or the Little Pine, was leader of our Indian allies at the taking of Macinac by the British in 1812, and was a noted medicine chief and warrior. Shinwauk was with Brock at Queenston Heights, and on his return, never tired telling of the deeds of that day and composed a song to celebrate the victory, which is still sung by his tribe. The Indian Home near Sault Ste Marie bears his loyal name.

Indian's Loyalty to Longfellow.

Bukjinene died in February, 1900, in his 86th year. Many of the exploits of Hiawatha were common lore in his mind. He often spoke of Longfellow, with whom he smoked many a pipe as he told his stories "fresh with the odors of the forest." As he grew old and feeble, Bukjinene longed again to see or hear from the poet, so he sent two of his sons all the way to Cambridge to greet him. They were astonished to find that Longfellow had been dead since 1882.

Kwasind, the strong man of the Edda, was it is stated an actual character of Pauwating Village, near Sault Ste Marie. After numerous other illustrations, Mr. Hamilton concluded with two beautiful Wyandot legends, as collected by W. E. Connelley, author of "Wyandot Foke Lore." This tribe lived two hundred and sixty years ago where Toronto now is, and gave that name, meaning "Land of Plenty," to this region. They were known in the Jesuit writings as Tinnontates, or the Tobacco Nation. Their neighbors to the north were the Neutrals and beyond them, south of the Georgian Bay were

the Hurons, all of whom suffered from Iroquois.

The Wyandots lived in this region only some ten years then emigrated westerly and finally settled in Kansas and Nebraska, where they are now civilized, and flourishing and interesting citizens. The first governor of the State of Kansas was William Walker, a Wyandot. This people have mostly lost their custom of storytelling and forgotten their legends, but Mr. Connelley gathered them from their old men many years ago and to him we are indebted for some beautiful examples.

Once Lived in Toronto.

The Wyandot tribe, who once lived in the vicinity of Toronto, are in the better class. When they lived here "The Little People," or faries, played on the meadows on moonlight nights, the woods, the water and the air had their weird creatures of the red man's fancies. Two of their stories "The Singing Maidens," and "The Sword and Belt of Orion," seem from their allusions, to have been composed when the Wyandots dwelt in and about this place. "The Singing Maidens" were Ploalies, daughters of the sun and moon, fair, happy dancing girls, who looked from the sky on the inhabitants of the earth, and in their father's absence dropped down and played a while with the Indian children.

It was said the lecturer, instructive, to find an interest taken in celestial phenomena by our original predecessors. He doubted whether people now give as general attention to the wonderful objects of the firmament as was bestowed by the bands of Lake Ontario 260 years ago. *W. E. C. Oct 22, 05*

The following new nominations for membership were read:

H. M. S. Cotter, Hudsons Bay Co. Agent at
Northwest River, Labrador

Rev. Henri Simard, Laval University Quebec.
nom. by D. J. Howell &
C. A. Chant.

Bernard B. Hughes, 80 Daballa St. Toronto.
nom. by J. C. Hamilton &
J. R. Collins

Walter E. Jackson, - B.A., Magnetic
Observatory, Toronto,
nom. by E. A. Dunt &
C. A. Chant.

J. H. Robinson, Yonge Street, Toronto,
nom. by W. B. Mearns &
C. A. Chant.

Librarian's Report was read.

Two papers were given, the first by J. C. Hamilton, M.B., D.P.B., on "Stellar Legends of the American Indians" an interesting & valuable contribution to the programme, & the second by Mr J. Edward Maybee, M.B., on "The Harvest Moon;" being an explanation of the cause of the phenomenon.

Oct. 31, 1905.

C. A. Chant
President.

Space and Time the Glasses By Which the World is Seen

Prof. Kirschmann's Paper on the Possibility of Life in Other Worlds Discusses a Mysterious Topic Along Lines Which Will Interest Even the Lay Reader.

"The Possibility of Life in Other Worlds," was the subject of a paper read by Prof. Kirschmann before the Royal Astronomical Society, Canada, at their regular meeting last Tuesday evening.

The introduction dealt with the appropriateness of such a subject on Halloween night, since Halloween was from times immemorial a religious festival, connecting stellar events with the life of the departed, probably living in other worlds. The chief part of the lecture was a criticism of the standpoint which Alfred Russell Wallace adopts in his book, "Man's Place in the Universe." If this was the kernel of the nut, the shells were a brief discussion of the philosophical problems as to what constitutes life, and what could be understood by life in other worlds. Three theories of the origin of life on this earth were mentioned:

1. The theory of spontaneous generation according to which life is the play of the ordinary forces.

2. The theory of Helmholtz and Lord Kelvin that life originally came to the earth in fragments of exploded worlds. This theory has lately assumed a new aspect thru the hypothesis of the chemist Arrhenius, that living matter must be supposed to be conveyed thru space in particles so small that they cannot be detected by means of the strongest microscopes. It was pointed out that the apparently revolutionising experiments of J. D. Burke of the Cavendish Laboratory, Cambridge, who produced what appeared to be life in an apparently sterilized medium, by the rays of radium, should be considered from the standpoint of this theory. If the cosmic life dust is so fine as Arrhenius claims it will penetrate like ether all ponderable matter and cannot be excluded by any kind of sterilization.

3. A third theory once held by Pechner claims that all matter is or was alive, leaving open the question whether in a state of great condensation and stability of matter life is extinct or latent. If one could believe in the existence of matter at all, this theory would from a philosophical standpoint seem to be the most consistent, since we have no other criterion for the existence of life than (in analogy with our own experience) movement with a will or purpose. But since we have no right to declare will or purpose absent where we do not see it, we have no right to declare any matter dead.

No Sharp Limit.

"It may be," said Prof. Kerschmann, "that the atoms or ions or sub-ions are alive. It may be that they are not matter at all—nothing but life. It may be that the movements of the celestial bodies are the expression of life. The whole galactic system with its belt of clusters and resolvable nebulae, and its polar regions with chiefly irresolvable nebulae prevailing, may form one huge cell in which the Gargantuan clouds (which show both resolvable and irresolvable nebulae) represent the nuclei.

"We must not say there is anything absolutely great and absolutely small, for all magnitudes are relative, and the mathematical conception of the approximation to zero is one of the most deceptive fictions which human intelligence ever fancied.

"There is no sharp limit between life and lifeless matter. It may be that the formation of crystals is the lowest kind of voluntary movement and the simplest kind of life."

"In the searching criticism of Wallace's book, 'Man's Place in the Universe,' Wallace claims that life is possible on a planet only if there is a permanent and accurate adjustment of a number of conditions, as e.g., a certain amount of heat, a certain obliquity of the axis of the planet towards the plane of its orbit, a certain mass, a certain proportion of water and land, a certain density of the atmosphere, and a certain amount of electricity and dust in it, etc. It was shown in the lecture that not only is the contention of Wallace very problematical, inasmuch as we do not know what a different combination of gravity, atmospheric conditions, inclination of the axis, etc., on another planet might bring about, but that the contention that these conditions had been the same on the earth since life appeared on it was totally disproved by the results of geological research. It was shown, for instance, how the size of living animals depends on the gravity obtaining on the planet in question, since muscular energy is proportional to the second power of the linear magnitude, but weight to the third.

The Power of Wings.

This circumstance is responsible for the fact that nature cannot produce on this earth very large flying creatures. The weight is too great and there is not enough opportunity for the development of brains. Thus nature had to start all again from a lower branch and develop the avians in

these four are able to make up those very complex and unstable chemical compounds which constitute the living organisms, and that they could do that only under the conditions of a moderate heat, as it prevails on the surface of our planet. Consequently on a planet much hotter or much colder than our earth, there could be no life. But this is an altogether fallacious conclusion, for we know only that these four elements are the organogens at the conditions of heat and pressure as they exist on the earth, and that other elements under the same conditions participate only to a lesser degree in the building up of organisms. What may happen when heat and pressure are completely changed we do not know. Under other conditions of heat and pressure totally different elements may play the role of organogens. And, after all, are the chemical elements final or are they only temporarily considered as such, because we have not succeeded hitherto in analyzing them further?

Elements May Combine.

If the law which governs qualitative differences, and according to which there can be in a manifoldness either no qualitative difference, or two antagonistic qualities, or an infinite number of qualities is valid here, then we should imagine that finally there is only one chemical element or two antagonistic ones, or an infinite number of elements. Under no circumstance have we a right to deny that under changed conditions of gravity and heat other elements may combine to form those complex and unstable compounds which characterize organic bodies.

Wallace gives the solar system a unique position at the outskirts of the central cluster, where it is at a certain advantage with regard to the influx of meteoric swarms and comets, which enable it to keep the heat supply of the sun constant for a longer period than any other star. But he does not tell why other stars in similar positions have not the same advantage.

He further claims that the great spheroid of the galactic system is the whole universe. Beyond it there are no stars, because we see none. He makes use of the old argument that if infinite space were strewn with stars, no matter how far apart, we would see the whole firmament ablaze, with an intensity like that of the sun, for in every direction in which we might look we would see a star at some distance. Mr. Proctor had tried to refute this argument by assuming that light might yet lose some intensity on its way, when enormous distances come into account. But, apart from this objection, the argument is altogether wrong, for he does not take into consideration the element of time. For light needs time in order to reach us, and a star, be it ever so bright, may exist without being seen by us, because its messages in the form of rays of light have not yet reached us. If infinite space is strewn with stars of different ages it is quite clear the farther they are from the earth the fewer of them we see, for a star at an extreme distance can be seen by us only if already shining for an extremely long time. Thus we cannot declare stars and other worlds not existent if we do not see them.

Tricks on Nature.

This suggests the question whether that which we see of the universe is all. We have only states of consciousness corresponding to certain selections of oscillations. Some oscillations appeal to the sense of hearing (16-16000 per sec); some are interpreted as heat, others as light; some, as the X-rays and the ultra-violet rays of the spectrum, we do not see at all. We have to play tricks on nature in order to make these agencies apparent. There are vast regions within the territory of possible vibrations (0 to infinity) which we do not perceive at all, not even indirectly. There may be worlds absolutely different from ours, which we can never perceive, because we have no organs sensitive to the periodicities of the vibrations prevailing in them. For a being endowed with senses susceptible to vibrations unknown to us, even this world of ours would assume a totally different aspect. As a somewhat poor illustration, think only of a being with eyes sensitive, not to the ordinary rays of light, but only to the X-rays. What would he see of all this striving and thriving humanity on this earth? Not much more than bones—yea, shadows of bones—and money.

Thus we arrive at the conclusion diametrically opposite to that of Wallace, that we have not the slightest reason to doubt that life is possible under conditions other than those found on our earth, and other than those prevailing in our own solar system. We must further admit the possible existence of worlds of which we have no knowledge whatever.

Faith Only.

"We are accustomed," concluded Prof. Kirschmann, "to regard ourselves as a part of the universe, an item in space and time. But this is only faith, not perfect knowledge. What we are certain of is that the whole world, as far as we know it, is a part of us, of our consciousness. I am not a part of space and time, but space and time, as I know them, are a part of me. Space and time are the tools with which we grasp the world. They are the glasses thru which we have to look if we want to see it at all. We can only look thru them, not at them. We have a lease of them, and usually a lease for less than 99 years. How the world will look without these glasses, and whether other worlds will be opened to us when other glasses are given to us we do not know. We have to wait till the lease expires.

The cosmologist Wallace is convinced that a certain wonderful adjustment of conditions which is fulfilled only on the earth and nowhere else, was necessary for the existence of life, seems to completely contradict the theories of the evolutionist Wallace, whom we should expect to advocate the adaptability of life to the conditions of the environment. Since this adaptability is so far reaching on this earth, one should expect that he would not relinquish the evolutionary principle, but would hold that this adaptation should not be confined to earthly conditions, but that even under conditions changed beyond the earthly limit there would be found a fittest that survived.

Life and Temperature.

A few striking errors were pointed out that are more or less common to all who have written on the subject. Thus, for instance, regarding temperature, it is said that no life can exist on Jupiter because its surface is still red hot. But physically there are only different degrees of temperature, and the antagonistic qualities of hot and cold are a matter of our senses. Especially the point of indifference is not constant even in the same individual at different times. So it is quite possible that the sense of temperature of the Jovians is shifted for a few hundred degrees, and they will have then just as pleasant walks on that hot surface as we have on the green meadows. It is usually claimed that life depends on the co-operation of the so-called four organogens, viz., carbon, nitrogen, hydrogen and oxygen, and that on

Oct 31/83-

Resolved That the
design for Secretary's Seal
presented by Mr Ellis
be accepted, and that
it be obtained forthwith
now on by A. Collins
Secretary Mr. Collins

Moved by Mr. Elton

That Mr. Collins

that the Pres + Mr. Ellis
be authorized to obtain dies
for embossing + get a seal.

MINUTES

of a meeting of THE ROYAL ASTRONOMICAL SOCIETY OF CANADA, held in the Chemical Building of the University of Toronto, 3^d Oct October, 1905.

Minutes of the previous meeting were read and confirmed.

Communications read :

From Mrs. Larratt W. Smith, expressing her thanks for the Resolution of Condolence sent to her by the Society.

From Professor E. C. Pickering, announcing the discovery of a new Algol variable, having a period of 12.5 days, a period longer than that of any known variable of the Algol type.

A Report from Council, respecting a device for a Seal for the Society, was read and approved.

Nominations were read for the second time of :

H. M. S. Cotter,

Rev. Henri Simard

B. B. Hughes

Walter E. Jackson

J. H. Roberson

Moved by Mr. Graham, seconded by Mr. Elvins, and carried, that the Recorder be directed to cast a ballot in favour of the election of all candidates, and the President declared them to be duly elected Associates of the Society.

The following new nominations were read :

Charles Jacques, B.A., Port Rowan,

proposed by C. A. Chant and E. A. Dent;

Mrs. E. Walter Maunder, London England, to be an Associate, (Honoris Causa),

proposed by E. A. Dent and C. A. Chant.

The matter of the election of Mrs. Maunder was referred to Council.

The lecture was given by Professor A. Kirschmann, Ph.D., on the subject of "Life in Other Worlds." Notes of the lecture are attached hereto.

C. A. Chant

MINUTES OF A MEETING held in the Chemical
Building of the University of Toronto,
14th November, 1905, the President, Dr.
Chant, in the chair.

Minutes of the previous meeting were read and approved.

Communications were read from :
The University of Tokyo and the University of
Calcutta, thanking the Society for copies of
its Transactions.

Directed that, in compliance with the
request of the University of Cal-
cutta, back numbers of the Society's
Transactions be transmitted.

The nomination was read for the second time of
Mr. Charles Jaques;

Moved by Mr. Paterson, seconded by Mr.
Misson, and carried : That a single
ballot be cast in favour of the
election of Mr. Jaques as an Asso-
ciate of the Society.

The President then declared Mr.
Jaques to be duly elected.

Mr. Miller, in reply to a question, stated that the
variable star Mira will probably reach maximum
about the beginning of March.

Mr. Phillips drew attention to a newspaper announce-
ment of a theory of Professor W.H. Pickering re-
specting the origin of the Moon, and that it co-
incided with the theory formulated by himself
fifty years ago.

Mr. Elvins reported a visit made by him to a new
observatory now being erected for the use of
the students in the School of Science.

The President then read two contributions from Mr.
J. Miller Barr, of St. Catharines, who was unable to
be present. The papers were on "The Variations of
Scotes," and "A New Problem in Solar Physics."
The latter dealt with

the results of some
recent researches of Prof. C. Lane
Poore, professor of astronomy in Col-
umbia University, N.Y.

Prof. Poore claims to have shown
that the figure of the sun changes by
a small amount periodically, corre-
sponding to the eleven-year period of
solar activity, and makes it appear that
at the time of greatest activity the sun
bulges at the equator to an extent ex-
ceeding 400 miles, and at the period of
least activity the polar diameter
slightly exceeds the equatorial.

These conclusions are reached after
measuring a number of photographs of
the sun by Prof. Rutherford, extending
over a period of some years, and an
examination of instrumental measure-
ments of the sun's disc at times of the
transit of Venus, and also some re-
cent solar photographs taken at the
Goodsell observatory, Northfield, Minn.

Mr. Barr reviewed this work and of-
fered some suggestions as to the cause
of such fluctuating changes in the
sun's figure. The paper was received
with interest, creating considerable dis-
cussion, which was taken part in by
Dr. Chant, J. A. Paterson, Prof. De-
Lury, Mr. Elvins and others.

C. A. Chant
Pres.

Nov. 28/05.

(A. F. Miller) Stellar motions, 6th culmination.

On this (sixth) occasion, Mr. Miller took as his subject the orbital motions of the stars constituting binary and triple systems. He pointed out that since all the stars describe apparent orbits as an effect of the light-aberration, and a few have orbits due to annual parallax, the movements detected in physical star-systems may be termed proper orbital motions.
So many stars apparently single ~~known~~ ^{have} been found to be telescopic doubles that the rules for the calculation of probabilities show enormous odds in favor of these pairs being physically connected, rather than mere optical doubles. He referred to the investigations of Cassini, Bradley, and other observers of the earlier telescopic epoch, explaining their methods of measuring the distances and position angles of the more conspicuous doubles known to them. He briefly outlined the great work of Sir ^{William} Herschel, to whose patience, zeal and unflagging energy we ~~owe~~ ^{owe} the first demonstration of the existence of stars associated in systems and moving in orbits. This fact ^{is} the work wonderful ^{as yet} brought to our knowledge by astronomy. By means of diagrams he explained the construction and working of the filar position micrometer, also showing the intimate connection between this instrument and the equatorial telescope. He illustrated his own methods of micrometrical measurement and demonstrated the application of the results to the calculation of the apparent orbits of several binary systems. He showed the great difficulties of determining with ~~absolute~~ ^{absolute} certainty the absolute or real orbits in the case of a ^{binary} system of long period. He gave some account of the extraordinary movements of the components in certain systems; and also referred to the singular fact that in many pairs which are assumedly physically united ^{no} ^{orbital} motion of either component can be detected, thus showing their extreme remoteness from the region in which the solar system is placed, or else the existence of unknown forces modifying the action of gravity as we understand it.

Minutes of a Meeting of
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA,
held in the Chemical Building of the University of
Toronto on the 28th of November, 1905.

Minutes of the last previous meeting were read
and approved.

Communications were read from :

Harvard College Observatory, respecting the
discovery at Geneva of Comet 5 Schaer;

Mr. Charles Upton, of Stroud, Gloucester, England,
acknowledging the receipt of a notification
of his election as an Associate.

Nomination :

Robert C. Carlyle, 497 Church Street, Toronto,
proposed by E.A. Dent and C.A. Chant.

*A very fine paper, the 6th in a series on Stellar
motions, was given by Mr A. D. Miller. Mr Miller
was welcomed most heartily, after his long silence, &
a resume of his paper is annexed.*

Dec. 12, 1905

*C. A. Chant
Pres.*

REPORT FROM COUNCIL.

A meeting of Council was held at the Observatory on the 8th of December, 1905, the President in the Chair.

In accordance with the rules laid down by the Constitution respecting the procedure to be followed in the election of officers, the following names are recommended by Council to the Society for election to the offices indicated :

President, -----C.A.Chant, M.A., Ph.D.;

1st Vice-President, - Alfred T. DeLury, M.A.;

2nd Vice-President, W. Balfour Musson;

Treasurer, -----George Ridout;

Secretary, -----J. R. Collins;

Recorder, -----Elsie A. Dent;

Librarian, -----K. M. Clipsham;

Curator, -----Robert S. Duncan.

Additional Members of Council :

Joseph Pope, C.M.G., F.R.S.C., Ottawa;

L. B. ~~W. Stewart~~, Toronto;

A. F. Miller, Toronto;

~~W. Stewart~~

~~W. Stewart~~

Council further recommends that that the nomination made some time since of Mrs. E. Walter Maunder as an Associate (Honoris Causa) be accepted, and that her election be proceeded with in due course.

The President was authorized to communicate with Professor W. W. Campbell of Lick Observatory, and Professor Frost, of Yerkes Observatory, to inquire whether they will accept Corresponding Fellowships in the Society.

C. A. Chant

were largely to be explained
by original differences ⁱⁿ ~~of~~
Constitution of the State,
rather than ^{entirely} as the result
of an Evolutional develop-
ment.

Thanking you for your
interest in the matter.

Sincerely Yours

W. P. Messer

ROYAL ASTRONOMICAL SOCIETY
OF CANADA.

17th Dec. 1901

My Dear Mr. Webb -

I alluding and the notes you
send for the minute book -

A short review was given
of the more important
attempts to form a satisfactory
classification of stellar spectra,
the systems of Secchi, Vogel,
Loebler, and the many being
compared. Reference was
also made to difference of
opinion regarding the relative

temperatures of stars of Secchi's
1st and 2nd types, and
attention drawn to the suggestion
of Prof. Frost that, in view
of the existing confusion
in the terminology of the
subject, and international
congress of astrophysicists
should be called for the
purpose of adapting, if
possible, a uniform system
of classification.

At the close of the paper
Mr. Miller contributed some
interesting remarks in the
course of which he strongly
expressed the view that
differences in spectral types

MINUTES OF A MEETING OF

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA,

held in the Chemical Building of the University of Toronto on the 13th of December, 1905, the President in the Chair.

Minutes of the previous meeting were read and approved.

Communications read :

Harvard Observatory Bulletins, respecting the discovery of a bright comet by Professor Kreutz, of Kiel;

Letter from Dr. Marsh.

Report from Council read and adopted.

Moved by Professor DeLury, seconded by Mr. Elvins, that the name of Dr. Marsh be added to those proposed by Council for election as a Member of Council;
Carried.

Moved by Mr. Paterson, seconded by
that the nominations be now closed;
Carried.

The nomination of Mrs. E. Walter Maunder to be an Associate of the Society (Honoris Causa) was then introduced, Council having reported favourably on the subject. Moved by Mr. Paterson, seconded by Professor DeLury, that the Secretary cast a ballot in favour of Mrs. Maunder's election, and the President then declared her to have been duly elected an Associate (Honoris Causa) ✓

The nomination for membership of Mr. R. C. Carlyle was read for the second time, and, following the same procedure, Mr. Carlyle was declared to be an Associate.

100 Bedford Road, Toronto,
The name of Mr. Harold W. A. Foster was proposed for membership by Messrs. J. C. Hamilton and J. R. Collins.

The President reported that he had engaged the services of Miss Jessie Lawson to catalogue the books in the Library and to attend there for two hours daily, from four to six each day except Tuesday, when the hours of her attendance will be from seven till nine p.m.

The paper was given by Mr. W. Balfour Musson, on the subject of "Stellar Classification." Notes of Mr. Musson's address are herewith. The paper was followed by a discussion in which Messrs. Miller Elvins and others took part.

C. G. Hunt
Dec. 26, 1905. President.

MINUTES OF A MEETING OF
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA,

held in the Chemical Building of the University of
Toronto, December 26th, 1905.

Minutes of the previous meeting were read and
approved.

The nomination for membership was read for the
second time of Mr. H. W. A. Foster, Toronto;

Moved by Dr. Marsh, seconded by Mr.
Graham, that the Recorder be directed
to cast a ballot in favour of Mr.
Foster's election, and the President
declared him to be elected.

Report of the Librarian was read.

Communications were read by the Secretary from :
Mr. J. Miller Barr, St. Catharines;
Mr. J. H. Weatherbe, expressing his intention of
retiring from the Society;
The Secretary of the New York Academy of Sciences,
asking that the exchange of publications
be continued;
Harvard Observatory Bulletins relating to the
positions of recently discovered comets.

Predictions of phenomena were read by Mr. Collins,
and notes on Mercury.

A ballot was then taken for the representatives of
the body of the Society on the Council, with the
result that Messrs. Miller, Pope and Marsh were
elected.

The balance of the evening was occupied by ac-
counts given by the President and Secretary of the
equipment, etc., of different scientific bodies for
the observation of the solar eclipse of 30th ^{August} last.
It had been impossible to gather much definite infor-
mation as to the results, such particulars not being
yet announced, but the aims and preparations of the
various expeditions were referred to and the condi-
tions reported under which they worked.

C. F. Hunt

President.

Feb. 6/06

Papers and Subjects for Discussion

Session: January-March, 1906.

Meetings begin at 8 p.m.

January 23:

The Society's Annual At-Home.

February 6:

Some Differences in Ancient and Modern Science.
MRS. S. D. KERAN.

February 20:

The Time-service of the Dominion Observatory.
R. M. STEWART, M.A., Ottawa.
(With lantern illustrations)

March 6:

Terrestrial Magnetism.
ANDREW ELVINS.

March 20:

Magnetic Disturbances and the Aurora.
R. F. STUPART, F.R.S.C.

SPECIAL NOTICE.

In addition to the papers announced on the opposite page there will be at each meeting:

1. Easy Star Lessons, to Aid in Identifying the Chief Constellations and Stars.
By MISS ELSIE A. DENT.
2. Report on the Sun's Activity.
By F. L. BLAKE.
3. Review of Important Articles in Current Literature.
By VARIOUS MEMBERS.

NOTES.

Free discussion is allowed on each paper and on other timely subjects. This often is a very interesting feature of the evening.

The Society publishes its transactions, and has a library open to its members.

Associate Membership is open to every one interested in Astronomy or Astronomical Physics.

FEE:

Gentlemen residing in Toronto \$2.00
Ladies and non-residents - - 1.00