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1893.

Evolution is a process, and this process commenced, according to this theory, when the dark solid masses collided. If there had been no impact there would have been no energy evolved ; no change ; no work performed, and therefore no evolution. Evolution, therefore, is not eternal—it had its beginning. And before that beginning—those dark masses, hurled by the hand of the Creator, speeding through space illimitable. Whence they emanated ? When they were aggregated ? When they became dowered with that mighty energy ? These and other tremendous problems rear themselves dark and vast before the human intellect. To these the Creator, enthroned in the circle of the heavens, has thus far closed the door: the fiat "Thus far shalt thou come and no further " has been written across the threshold, and the eagle intellect of man has bravely struggled to reach the summit, but, baffled and weary, has fallen back upon itself.

But yet, when all is said, and when the topmost height of human reason has been climbed, and we struggle for truth, sometimes successfully, but ofttimes vainly, do we not find in the words of the dead Laureate—

> "Our little systems have their day,
> They have their day and cease to be:
> They are but broken lights of Thee,
> And Thou, oh Lord, art more than they."

The reading of the paper was followed by a lively discussion, in which the President and Messrs. Elvins, Harvey, Phillips, Dewar, and others took part.

ANNUAL MEETING.

January 10th, 1893; Mr. John A. Paterson, M.A., Vice-President in the chair.

The chairman, on behalf of the deputation appointed by the Council to wait on Mr. Hart A. Massey, reported that as the designs for the proposed Massey Memorial Hall, a gift to the citizens of Toronto, were near completion, and as the work was to be begun at once, Mr. Massey could not give any distinct promise that he could erect an observatory in some part of the building for public use. When finished, the Society

might have a room in which to hold meetings. Mr. Massey was sorry the matter had not been mentioned at an earlier day as he was willing to do what he could to advance the study of Astronomy, a subject in which he took a deep interest. Mr. Elvins intimated that if anything was to be done in the future by the Society in regard to constructing a popular observatory, no doubt Mr. Massey would assist substantially.

Among the letters read was an interesting one from Professor W. H, Pickering, Director of the Harvard College Observatory, established at Arequipa, Peru. Owing to a want of uniformity in the Martian names employed in England, Europe, and the United States, difficulty had been experienced in appreciating everything contained in Professor Pickering's telegraphic reports to the press. His attention having been called to this, the Professor thus wrote to the Society : —

> The nomenclature upon Mars is certainly in very bad shape, and I should be glad to join in any movement to improve it. I feel the more interest in the matter as I hope to publish a map of the planet, shewing a number of features not previously located. Personally, I find Professor Schiaparelli's names often very long and very hard to remember. The English nomenclature, in that respect, seems to me much superior. On the other hand, if that is retained, it seems to me the same difficulty will arise in the future that now exists in the case of the moon—very inconspicuous and uninteresting peaks commemorate great names like Herschell, Le Verrier, and Encke, while much more important summits are named after mediocre men who lived long before them. Moreover, it seems to me a little presumptuous to foist any man's name upon a grand natural object. I am quite prepared in my work to adopt any plan of nomenclature that meets with general acceptance.

The following officers of the Society for 1893, were declared to have been duly elected by acclamation, Miss A. A. Gray, who had been nominated for the office of Treasurer, having been permitted to withdraw :—Honourary President, the Honourable George W. Ross, LL.D., Minister of Education; President, Charles Carpmael, MA., F.R.A.S., F.R.S.C., etc., Director of the Toronto Observatory and Superintendent of the Dominion of Canada Meteorological Service; Vice-Presidents, Larratt W. Smith, Q.C., D.C.L., and John A. Paterson, M.A.; Treasurer, James Todhunter; Corresponding Secretary, G. E. Lumsden; Recording Secretary, Garnet H. Meldrum; Librarian, G. G. Pursey; who, with the following gentlemen, compose the Council of the Society for 1893 :— Messrs. A. Elvins, A. F. Miller, E. A. Meredith, LL.D., Arthur Harvey and D. J. Howell.

The paper for the evening was entitled

METEORITES,

and was, by request, read by the author, Dr. Otto Hahn, of Toronto, who has given the subject a great deal of attention.

The paper was an elaborate one, and the interest aroused by it was enhanced by the exhibition of a large number of micro-photographs and specimens. Having referred to the superstitions respecting meteorites during the period when they were objects of worship, and to the use by the ancients of meteoric iron weapons at a time when the smelting of iron was unknown, Dr. Hahn dealt in a critical manner with the chemical and physical nature of meteorites, the different kinds : iron, half-iron and stone (chondrites, enkrites, and cool meteorites), their constituents and the chemical combinations contained in them, the former being the same as on the earth, the latter nearly all the same. The doctor then took up the question of the origin of meteorites, concerning which he has published a book, in which are detailed the organisms found by him to occur in the chondrites. On this point he laid stress on the constitution of time chondrites, their structure as rocks, the structures of the enclosures (χονδροι), which have not the appearance of fossils embedded in rock, nor of a glassy mass, but of particles of the rock itself. Next, he explained the structures of the enclosures or substances found in the meteorites, and their relation to the structure of organisms, such as corals (favosites), sponges, and crinoids, all fossils occurring in the earliest schists of the earth. Dr. Hahn contended that meteorites are not broken planets ; that most of them have fallen in the same shape and are of the same constitution; and that "as they are born, each is the germ of a planet if it could find material enough for growing." The doctor exhibited a large collection of meteorites (iron and stone) and of thin slices of meteor stones with substances which were claimed to be corresponding fossils of the silurian age; many of the specimens were polished so as to show the beautiful forms within them. His collection of micro-photographs seemed to be very complete, and challenged the admiration of the members of the Society, the doctor having, with great patience and skill, prepared his own microscopic slides. The examination of the slides by means of seven or eight powerful microscopes, which brought out perfectly the exquisite detail of the specimens, was by no means the least interesting portion of the evening's work.

Mr. Arthur Harvey, in moving a cordial vote of thanks by the Society to Dr. Hahn, first, for his paper; second, for his exhibition of specimens; and third, for his gift to the Society of a meteoric stone and a series of photographs, expressed the hope that a work containing the doctor's views on the forms of life which he has found in the chondrites, would soon be given to the world.

The motion was seconded by Mr. J. M. Clark, M. A., and carried with applause.

Mr. Lumsden's motion respecting Associate Members, notice of winch was given at a previous meeting, was carried; it was decided that the fee for such members should be one dollar per annum,

The duty of re-arranging the list of Corresponding and Associate Members in accordance with the resolution was referred to the Council.

Dr. Harrison, of Keene, was elected an Associate Member, and Mr. G. Hahn, of Toronto, an Active Member of the Society.

Mr. Charles P. Sparling was appointed to be Recording Secretary, vice Mr. Garnet H. Meldrum, whose resignation was accepted with regret, owing to his inability, by reason of other duties, to retain the office. As the work in connection with time Society was increasing, the following assistants were elected :—Miss Annie A. Gray, to be Assistant Recording Secretary ; Miss Sarah L. Taylor, to be Assistant Treasurer ; and Miss Jeanne Pursey, to be Assistant Librarian.

The best thanks of the Society were directed to be conveyed to the editors of the morning papers in Toronto for their unvarying courtesy in publishing the reports of time meetings held from time to time, and for otherwise advancing the Society's interests.

Mr. D. J. Howell, the retiring Treasurer, read a Statement which showed that the Society was in a very prosperous condition ; that its membership was steadily increasing, and that a valuation exceeding $1,000 had been placed upon its books and apparatus, which include many volumes, which could not now be duplicated, and the Sir Adam Wilson telescope and celestial globe and other instruments, lantern-slides, etc. Mr. Howell was accorded a vote of thanks for his services, extending over several years.

The communications read included one from a gentleman in Assiniboia, thanking the Society for a slight service rendered; one, from a distant member, asking that a copy of the annual reports of the Society be sent to the editor of *The Arena*; one from Mr. J. Ellard Gore,

F.R.A.S., respecting a work of his recently published; one from Dr. Joseph Morrison, Ph.D., F.R.A.S., of the American Nautical Almanac Office, Washington, congratulating the Society upon its progress, and offering a paper on the general and special methods of computing planetary perturbations, written so as to simplify the demonstrations of the various *formulæ* and to give most persons a pretty clear idea as to the manner in which the subject is handled; and one from Dr. M. A. Veeder, of Lyons, N.Y., containing a special announcement with respect to auroræ:—" I am still considering the question of the local distribution of the auroræ, a subject on which I corresponded with you last year, and now intimate that it is possible to report progress to the extent, at least, of saying that whatever it may be that attracts the auroræ in certain localities as compared with others in the same latitude, it is in some way associated with sharp bendings and displacements locally of the lines of equal magnetic declination; that there are three localities thus far identified which exhibit the peculiarities, viz., Northern Maine, the Adirondack region of Northern New York, and the region near the mouth of the Ohio river, and that I have not secured any clear evidence that the copper deposits in the vicinity of Lake Superior have any special attractions for the auroræ."

The Rev. T. E. Espin, F.R.A.S., of Tow Law, England, sent a list of new *comites* to well-known double-stars detected by him during the autumn, while measuring stars for the new edition of Webb's Celestial Objects, which he is editing. In his letter, Mr. Espin was good enough to say that the suggestions of the Society, invited by him some months before, respecting the plan of the new edition, had been helpful, and that he hoped to be able to adopt most of them.

The publications laid on the table by Mr. G. G. Pursey, the Librarian, included the latest issues of The Royal Astronomical Society, The British Astronomical Association, and The Astronomical Society of the Pacific, as well as some pamphlets from Observatories and Societies in France and Germany. A copy of Miss Ellen M. Clerke's recent book, "Jupiter and His System," was shown to the members. Observations on the sun, planets, meteors, and Comet Holmes were made, or read, by Messrs. Pursey, Harvey, Miller, Elvins, Copland, Lumsden, and others.

Mr. Lumsden laid on the table, a copy of M. Camille Flammarion's new work on Mars. The book which is beautifully illustrated by nearly six hundred designs, was carefully examined and was highly commended.

NEW COMPANIONS TO DOUBLE-STARS IN WEBB.

The appended paper, referred to above and contributed by Mr. Espin, was read :

The following new companions have been discovered during a revision of some stars for the new edition of Webb's Celestial Objects. The telescope used is the 17¾ inch reflector of the Wolsingham Observatory ; the micrometer was made by Troughton & Sims. The mean measures only are given. The stars are arranged in their order of constellations. The Right Ascension and Declination are for 1900. The magnitudes are on Struvès Scale. The work was done from September to December, 1892.

NO.	STAR.	R. A.	DECL.	P.	D.	N.	MAGS.		
		h. m.	° ′	° ′	″				
1	Σ 994	5 52.8	3714	220.9	9.13	1	7.2	12.0	AC.
2	P III.97	3 34.5	5939	96.2	18.68	1	6.0	13.8	AB.
. . .	. . . . .	. . . .	. . . .	302.4	34.65	1		13.0	AC.
3	Dembowski	4 32.0	5317	69.0	18.04	3	8.5	12.5	AC.
4	β Camelop.	4 54.5	6018	167.4	14.81	2	7.0	11.5	BC.
5	Cassiop.	0 25.6	5614	113.3	6.36	3	8.2	8.5	AB.
6	Anon.	0 29.4	56 3	158.5	8.66	3	8.	9.	Yellow : blue.
7	Anon.	0 49.7	5715	116.3	4.86	2	9.6	9.8	AB.
8	Σ 18.	1 49.3	6048	75.2	29. 9	2	7.0	13.5	AC.
9	Σ 306.	2 43.4	60 1	74.3	17.02	2	7.1	13.8	AC.
. . .	. . . . .	. . . .	. . . .	112.0	19.21	2	..	13.5	AD.
. . .	. . . . .	. . . .	. . . .	105.6	27.40	2	..	13.0	AE.
10	Anon.	23 56.7	5926	289.3	10.13	...	8.	9.	Yellow : blue.
11	Webb.	19 46.8	4454	327.9	31.54	5	8.0	9.0	AB.
. . .	. . . . .	. . . .	. . . .	138.8	7.68	3	..	11.5	AC.
12	Anon.	20 45.2	3251	245.6	9.61	3	8.7	9.0	AB., very red : blue.
. . .	. . . . .	. . . .	. . . .	141.1	17.86	3	..	10.0	AC.
13	59 Cygni.	20 56.6	47 8	224.1	37.09	3	4.7	13.5	AD.
14	H. V. 66	7 21.7	2221	23.9	11.31	1	7.0	13.5	
15	Σ 2916	22 27.0	4042	118.0	16.56	3	8.0	13.8	BD.
16	Σ Lacertae	22 31.4	39 6	200. ±	9.95	3	8.0	13.8	Dd.
17	Σ 446	3 41.9	5221	42.7	11.69	1	7.	12.5	AC.

NOTE.—No. 3. Place of 2 Cameli. No. 9 Dembowski measured a more distant *comes :* there are three others still more distant. Where the stars are below 12.5, the measures have been made with great difficulty and show considerable differences both in distance and angle. The mirror has not been silvered for four years and so the faint stars are difficult objects with it.

T. E. ESPIN

Tow Law, Darlington, England, 1893, January 6th.

As Mr. Espin's paper was considered to be of interest to observers and as the report of this Society would not, on this occasion, be issued for some months, the Secretary was requested to offer it to the editor of *Astronomy and Astro-Physics*, who published it in the March number of that periodical, with some observations by Mr. S. W. Burnham.

After some discussions on general topics, the Society brought the proceedings for the year 1892 to a close and adjourned.