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Astronomy and Meteorology.

No. 3.

MONTREAL, JUNE, 1887.

\$1 PER ANNUM—TEN CENTS PER COPY.



Astronomy and Meteorology.

PUBLISHED MONTHLY BY

WALTER H. SMITH,

31 ARCADE STREET, MONTREAL, CANADA.

Astronomy.

The stars known to be variable now number about 150.

Some of the so-called "fixed stars" are estimated to be moving over a space equal to three thousand miles in a single hour.

Forty-four comets were observed in the ten years ending May, 1886. Six were conspicuous objects to the unaided eye, two, in fact, being remarkably so, notably those of 1881 and 1882.

In 1876 no comet appeared; in 1877 there were 6; 1878, 3; 1879, 5; 1880, 5; 1881, 8; 1882, 3; 1883, 2; 1884, 3; 1885, 6 and to May, 1886, 3. This may be considered as an extraordinary number.

The Pons-Brooks Comet of 1883-4 was one of the most interesting of the above, not because of its brilliancy, but by reason of its being the second instance of the return of one of the Neptunian family of comets to perihelion. Of these bodies there are now 6 known, with periods of from 68 to 76 years. Halley's, the largest of the 6, has already made several returns, being due again in 1910. Pons-Brook's, first seen in 1812, has returned; Olber's, (as stated in the May number of *ASTRONOMY AND METEOROLOGY*) is due in 1889 and three others in 1919, 1920 and 1922. All of these comets are believed to have had their orbits changed in some manner by the action of that sentinel of the solar system, the planet Neptune.

The *Südercal Messenger* for May sustains its high reputation as a first class astronomical journal. Prof. Kirkwood contributes a short paper on "The Eccentricities and Inclinations of the Asteroidal Orbits," Prof. Bigelow, a paper on "The Phenomena of Cooling Envelopes," and its editor, Prof. W. W. Payne, several highly interesting "Editorial Notes." It is published at Northfield, Minn., price \$2 per annum. Ten numbers are issued each year.

PLANETS IN JUNE.

Venus wins the place of honor this month, not only because of her brilliancy but by reason also of her position. On the opening days, she is close alongside Saturn, having passed 2° 15' N. of the slow moving planet on May 30. She leaves Saturn behind, only to pay her court to *Regulus*, drawing perceptibly nearer to *Alpha Leonis* as the month closes, the conjunction of planet and star taking place at 10 p.m., Montreal time, on July 4. Are we to consider this as an omen to the Republic, occurring as it does on its natal day? About the middle of the month Venus does not set before a quarter to eleven o'clock.

Jupiter is second in brightness and is on the meridian—overhead—at 9 p.m. on the 1st. He is consequently still well placed for observation and is ready to exhibit his two central belts on the application of very low optical power. He is "stationary" at midnight on the 22nd.

Saturn is hastening to conjunction on July 18, and observation is about over with him for a few months. He is 1° 34' S. of Mercury on the evening of the 20th.

Uranus is "stationary" among the stars on the 16th, and 90° from the sun—quadrature—on the last day of the month.

Mars is practically invisible.

THE CONGRESS AT PARIS.

Thirty-five astronomers from other portions of the world, together with fifteen from various parts of France—a total of fifty—were present in Paris at the inaugural meeting of the Congress convened for the special purpose of photographing the whole heavens. M. Flourens, Minister of Foreign Affairs, presided at the opening session. In his address he welcomed the strangers in the name of France, thanking them for accepting the invitations sent out by the

director of the Paris Observatory. Continuing, he alluded to the magnitude of the work about to be undertaken; saying, however, that he did not doubt but it would be carried to a successful issue, especially as the scientists would have the help of their various governments in so doing. The correctness of the proposed maps would, he knew, far surpass what had yet been realized, the eye being directed to depths where, even with the aid of the most powerful telescopes, it had until now been thought impossible to penetrate. Innumerable stars, as yet unknown, would be revealed, to the everlasting glory of the scientists before him, who were opening a new era in science, by transcribing the exact history of the Universe! The address concluded with congratulations to all present, but especially to M. Struve, whose twenty-fifth anniversary as Director of the famous Pulkowa Observatory had been celebrated a short time previous.

CONSTELLATIONS IN JUNE.

On the 15th at 10.30 p.m., directly North, near the horizon, lie *Auriga* and *Persus*, above the latter, to the East are five stars like a W, this is *Cassiopeia*, above which is *Cepheus*. Below *Cassiopeia*, skirting the horizon, is *Andromeda*, with a portion of *Pegasus* almost due East. *Cygnus*, with its bright star, *Ariedel*, is above *Pegasus*, in the Milky Way. Above its second star, *Beta (Alberio)* is *Lyra*, with its magnificent brilliant of the first water, *Vega*. The first magnitude star S.E. of *Vega* is *Altair*, in *Aquila*; below it *Capricornus* is ascending. West of the latter is *Sagittarius*, with *Ophiuchus* and *Serpens*; and above these, reaching to the zenith, is *Hercules*. *Scorpio* is West of *Sagittarius* and contains several fine stars, its brightest being named *Antares*, and its next brightest, *Graffias*. *Libra*, without any conspicuous stars, is West of *Scorpio*, and *Virgo*, with *Spica* and *Jupiter*, is further West still. *Corvus* and *Crater*, below *Virgo*, are setting. The bright star above *Virgo* is *Arcturus* in *Bootes*, to the right of which is the insignificant cluster named *Coma Berenices*. *Leo*, with *Regulus* and *Venus*, is setting, while over the Lion's tail is *Canes Venatici*. *Ursa Major* is towards the North-West, its tail uppermost, and a part of *Gemini* is on the North-Western horizon. Overhead are the circumpolar constellations of *Draco* and *Ursa Minor*, with its chief star, *Polaris*.

Sebold Melbin;

OR,

THE WORLD OF MARS.

By Walter H. Smith.

"World of Mars:
Lives there a human brotherhood on thee
Without the sins and errors of mankind."

CHAPTER V. (Continued)

The day outside was bright and sunny, and the door of this beautiful winter garden ajar. From the interior floated forth melodious sounds such as it had never before been my privilege to hear. Good music has a great charm for me—I think it has for all—and this music seemed—to compare it with the best on earth—like the exquisitely trained notes of a most gifted singer, whose "divinely warbled voice" was accompanied in perfect harmony by some stringed instrument.

As it caught the sound, my soul, enraptured, started forward, believing itself able to examine without fear of discovery. From this idea, however, it was quickly undeceived. The conservatory—for such to all intents and purposes it proved—appeared in the interior an elysium. The Winter season prevailed without, but all was delightfully redolent of the odors of Summer within. Surely, I thought, Martialists excel in floriculture and horticulture. This I found true, not only of the more pretentious, since every dwelling, no matter how small its size or limited its owner's means, is furnished with a winter garden, rivalling, if not surpassing, some of the finest on earth. It is a favorite maxim with them, that the nearer one gets to nature, the more natural one is, and wherever the cold of Winter effectually debarb outside horticulture, there it is on Mars that one finds the winter garden brought to its greatest perfection. In the one I am describing, trailing plants of immense length and variegated foliage, climbed in luxuriant profusion up the sides and across the roof, emitting, from both blossoms and leaves, odors of the most fragrant nature. Jets, or to speak correctly, sprays of water, leapt up from numerous mossy spots, rendering the air moist and favorable to vegetable growth.

"Who loves a garden, loves a greenhouse too,"

says Cowper, and truly; nor lives there a horticulturist but would have instantly fallen in love with this greenhouse. In it were plants which I could not name, for I had never seen their like on earth, flowers, chosen for their perfume, others for their beauty, and plants for their foliage, or fruit. By this means a well ordered Martian household is always kept supplied with fruits, which form one of the staple articles of consumption. In every village, town and city are to be

found greenhouses, botanic gardens and arboretums supported out of the public funds; where the poorer classes can always procure what would on earth be considered "delicacies out of season," at prices fixed by law. Access can also be had at all times to these gardens by the public.

Much taste is naturally displayed in the ordering and laying out of winter gardens. In the one I had entered, everything proved to be grouped in perfect keeping, there was order in disorder, art in nature, yet it was hard to say which was which, for neither predominated. The door I was entering, opened at that end farthest from the mansion, and half way down rose a dome. The conservatory, although a private one, was large, being, so far as I could judge, about two hundred and fifty yards in length, of corresponding breadth and height. Beneath the dome a fountain plashed, leaping and sparkling up to the very top, water rising of course much more readily under pressure than on earth, owing to the lesser gravity of Mars. Around the fountain was a basin, and around it, an open space. In this space, large lounges or couches, suitable for the giant-like forms of the Martian race, were placed.

CHAPTER VI.

MYRINA.

I leave you to imagine my surprise and delight when I discovered myself facing that very affinity my soul had long before shaped out as the perfection of womanly beauty. I started, looked again and again, but so it was; there could be no mistake, 'twas undoubtedly the realization of my imagings. Yes, before me, upon one of the lounges, reclined the fairest, the most beautiful form that it had yet been my privilege to see. At the moment in a fit of abstract thought, her blue eyes were fixed on the spray of the fountain, as it shimmered in the winter sunbeams. Not very much taller than the daughters of Eve, being, indeed, of short stature when compared with another damsel, whom I rightly judged her sister, along-side. Very lovely I thought her face, her cheeks having that deep red-pink glow that students of what are termed "astral influences" on earth attribute to some Mars people. Long golden-hued tresses, the color of ripened wheat, fell about her in light, rippling, wavy billows crowning her head and caressing the reclining beauty's neck and bosom. A lofty forehead, bespoke an intellect of no common order; those dark blue eyes expressed the brilliancy of the mind of their owner; the pretty mouth spoke as much of womanly firmness and resolution as girlish trust, truth and innocence; the long straight nose, giving an otherwise perfect face a thoroughly classic appearance; her chin and neck would have made half the belles of London, Paris and

New York sick for very envy—such was this fair Martian, the offspring of a thousand generations whose purity had never been contaminated by the mire of disease or the murrain of sin. The fittest survival of the fittest—born throughout a million years, how shall words portray Myrina! Ye who love; whose

"Love flings a halo round the dear one's head.
Faultless, immortal—"

remember all that your beloved is, how she is more lovable, more beautiful by far than the rest of womankind, no matter who or what she or they may be; remember this, and thus remembering, picture Myrina even more lovable, more beautiful still.

She had been playing, but had laid her harp—if I may so term that which harp was not—aside, and at the instant of my advent appeared deep in reverie. The forms of both these ladies I noticed were robed, rather than clothed, in loose, but warm outer garments of some costly fabric, a material that could be said to suggest rather than reveal, the rounded outlines of the beautifully moulded forms beneath.

On a cushion beside her sister—for such relations these ladies really bore each other—the younger, who was of perhaps a more lovely cast of countenance, but not with one quarter the individuality of the elder, was playing upon another stringed instrument. I thought of Timotheus, who

"With flying fingers touched the lyre
The trembling notes ascend the sky
And heavenly joys inspire."

But, greater than Timotheus, who

"Raised a mortal to the skies."

Greater than Cecilia, to whom he had to "yield the prize," because Cecilia

"Drew an angel down,"

were these fair musicians, these Martian St. Cecilians, who had drawn a mortal away from his clayey tenement, away through millions of miles of space to pay them a visit upon another planet!

The music ceased. Said the younger, turning smilingly toward the elder:

"Voiceless and tuneless once more my sister, my Myrina. Tell me of whom or what thou dost now dream, falling into a trance, yet with thine eyes open! Truly, sister mine, our seers spoke rightly when they counselled our father Am-Ram to place thee with the priestesses that serve in the inner Sanctuary, in order that thy meditation and quiet might have known no bounds, and thy visions of the worlds that are beyond have been undisturbed."

These words were spoken in exceedingly rapid but very musical accents. The language was, of course, entirely foreign to any I had heard on earth, being incisive, very condensed, apt in expression, and thus conveying a great deal in a few words. What has taken nearly eighty English words to imperfectly translate, the perfect language of Mars expressed better in fifteen! What

astounded me more afterwards—at the time I was too busily occupied with the scene before me to think of aught else—was the readiness with which my spirit senses received and understood, or perhaps I ought to say, translated the words spoken.

It was Myrina's turn to speak. How eagerly I listened for the sound of her voice, that voice I had so often heard in my dreams. Though I live to the age of the patriarchs and pass through as many troubles as the man of Uz, all the waters of affliction will never wash from the memorial cells of my brain the tones of my Myrina's reply. O ye that love! tell me now do ye remember the first words of your loved ones, be those first expressions the sayings of parent, brother, sister, child, lover, husband or wife, as such, were they not treasured as sacred as the words of the never-to-be-forgotten dead? Commonplace words they may have been—this world is a planet brimmed with commonplace—but words, surely, of import to those who had longed and listened, waited and watched, yea, patiently and petulantly prayed to hear them!

"Jest not because I love the service of the sanctuary, dearest;" replied the maiden called Myrina, "neither chide me because I am tuneless to-day. Your thoughts run not always in a trivial mood, any more than mine. Sister, sister," exclaimed Myrina, after a pause, "what meaneth this?"

"Meaneth what, Myrina?"

"What meaneth my agitation?"

"I know not, your trance has perhaps weakened you."

In my eagerness to catch Myrina's answer, I stepped boldly forward beyond the shrubs that had hitherto hidden me from view, thinking that my spirituality would screen me from these young Martians. I then discovered my mistake. Divining that her words would relate to myself, I cannot say that I was very much surprised when Myrina said:

"Not so, rather it has strengthened me for that which is to come. That which is to come! The moment that our seers, that I too have predicted, comes swiftly now. Nor would I wish to stay, but rather hasten the flight of time. Yea, it is well with me at last; I can dare now to forget the lagging of the hours. Past forever is the lonesome dreariness of waiting. Yea, I know that the presence concerning which I have had so many visions; on whom I have learned to think sleeping and waking, until we have become as one, is very near. 'Twas but now in my trance that I beheld the leafless woods on the slope of Mount Arbora. Methought that I was searching there for him whom my soul loveth. Brief was my search, I called once, yea twice, when the voice that I love most answered. I became

afraid and fled homeward; I entered here, and then it was that I was awakened by thy voice, my sister."

There was a brief pause, but before the younger had time to reply, Myrina exclaimed: "I did not dream, see, he is here!"

Greatly agitated, Myrina started to her feet. Her long hair fell in a golden shower about her, she dashed it away, and with extended arms pointing directly to where I stood, exclaimed: "Stranger from our sister planet, welcome! Many spirits from thy orb of sin have ere this visited our world, have sojourned awhile, have conversed with us a brief space and passed on, whithersoever the Great Disposer of souls directed. They were not as thou art, and I had nor wish nor power to stay them, much less to draw them hither. Thou art different. From thy birth my spirit has been one with thine, to-day my life has become one with thy life; previously united but in thought, we are henceforth united in reality. No more should our thoughts be sad, sad because of unfulfilled longings after a chosen companion. Hope is fulfilled from this precious moment, and come strife, peace, discord or security, separation is not for us, so long as life endures. Let countless obstacles interpose, what care we, who henceforth are one? And what our God hath joined together, a few million miles of vacant space shall surely not suffice to keep asunder."

Unable, had I so desired, to resist such pleadings, or such gracious commands; my bewildered, overjoyed spirit answered her will, and, approaching, knelt beside her feet. My spirituality could not bar me from her sight, Myrina was sinless, and her fair eyes looked down and studied my face as readily as I looked up to hers. She knelt beside me, we registered a vow of mutual affection, we rose simultaneously, reading each other's thoughts and with clasped hands—"There's piercing expression in tightly locked fingers,"—stood up and whispered each the other's name. Affection needed no further introduction, and, "Seybold, Myrina, — Myrina, Seybold," passed from lip to lip.

The sister was amazed, and no wonder. No such occurrence had before found a place in Martian records, lengthy as they are. At last she recovered sufficiently to rise from her seat and extend a hand to each of us, wishing us,—somewhat sadly, I thought—joy and felicity.

To me the pleasure of the hours that followed was a unique experience, never to be forgotten. Is it strange that I have graven it with the pen of sure remembrance in the rock of my memory for life? What remembrance can be as dear as that of the first meeting with our first love? I can almost see us now, moving about in that sylvan retreat, the

fountain plashing, while I greedily listened to their most interesting conversation. Now Myrina explained the beauties of some leafy specimen, anon we were all three seated beside the fountain, I listening to the witching melody of voice and lyre wherewith my Martian betrothed and her lovely sister entertained me.

Do you ask me what was the burthen of those songs of a distant planet? Surely my friend, it should not be very hard to guess. Songs are sung on earth to many themes, so numerous, indeed, are the themes that abject realism has bidden its versifier "sing of a beefsteak" and not bidden in vain. On Mars 'tis different. Less gross, the inhabitants, although of earlier origin, have not degenerated to the extent we have. Therefore they dedicate their songs to better themes, to religion, the arts, the sciences, to the beautiful in nature, and to the noblest deeds of the past; but, more frequently than all these together their poetry has become a poetry of the affections. "That ye love one another," our "New Commandment," is as old as their very existence as a people; has been practised from the beginning, and has consequently fruited to perfection. So it is that on Mars their sweetest singers; their ablest poets, their most gifted musicians, sing of the affections. And how sweet such songs can be made, I leave those who have aspirations after purity to guess, especially those who have learned the mystic charm of solemn music, by listening to those

"Blest pair of Sirens, pledges of heaven's joy,
Sphere born, harmonious sisters, Voice and Verse,"

as united by the oratorio writer and the singer of deservedly world-wide reputation.

From song, we drifted again into conversation. It became my turn to talk. I was plied with questions concerning the earth. The sisters sighed frequently at the account I was obliged to give them of mankind's present condition. What surprised them most was the increased approximation of mankind into cities, and the gradual depopulation, or at best, stationary condition of rural districts as regards population. In it they said they saw grave consequences, our race was destined to become feebler, weaker, sicklier and shorter-lived as the centuries moved on. To-day, they pointed out, there existed no semi-barbaric nations or hordes to take the place of the nations whose civilization would eventually destroy themselves. There are, they said, no Goths, no Vandals to-day to overrun modern Italy; no Angles, no Saxons to replace the effeminate Britons and luxurious Romans, no hardy English to drive the redskins off the face of the earth, and the end of your civilization must be senility, dotage, death.

(To be Continued.)



Weather Forecast.

JUNE, 1887.

A dry, cool April in the North and North-West, gave "a scarcity of April showers," as I anticipated, in many sections, while in the South and South-West, the temperature was above the normal, and the drought in places persistent. May, as I declared it would, continued advanced and Summer-like generally during the first twenty-five days. "Portions of the month" were indeed, "more like June or July," owing to the heat which prevailed far to the North, temperatures of from 80° to 90° being frequent and "extensive bush fires" enveloping the face of nature. It was a rush all at once from April to July, and with an absence of the usual spring rains, "crops needing a succulent growth" soon began to promise but poorly. On May 10th despatches from Iowa, northern and central Illinois, Ohio, Indiana, Wisconsin, Missouri, Kansas and Nebraska reported dry weather, and the crops suffering considerably for need of rain in the two last named states. Wheat, in consequence, was not all it was expected to be, but the prospects for corn were never better. But you are anxious to know what I think about June. Well, I believe that June 1887 will be an unsettled, unsteady month, stormy, muggy, cool, hot and frosty in turns; altogether a sort of month that people will not be sorry to see the end of. Vegetation at the entry of June, will, of course, be well advanced. Electrical storms promise to be frequent, and at least one cool reaction, that I locate about the middle of the month, promises local frosts in Canada, the Northern and North-Western states.

Below is my forecast by weeks. From it you will see that a medley of weather is anticipated:—

Opening days, June 1 to 4: Windy—Fine, hot weather, too dry in places; frequent thunder storms in others.

Week ending June 11: A cooler change, scattered showers—Fine and hot—Sultry and showery—Generally heavy rainfalls, with wind and thunder at the close.

Week ending June 18: Windy—A decidedly cooler change, with rain, hail,

and thunder storms—Frosts probable in the Northern and North-western States and Canada—Week ends fine, warm and favorable.

Week ending June 25: Opens fine—Thunder showers, cloudy, windy and unsettled—Cool rains in sections—Hot weather about the 23rd to 25th, with some disastrous local storms.

Closing days, June 26 to 30: Fine, hot to sultry weather, with thick clouds and high winds in sections—Unsettled, with a sudden cool reaction probable about the 29th and 30th.

EARTHQUAKE WEATHER.

The proposition that earthquakes follow extended droughts has been again proven by the convulsions in Arizona on May 3. Should the heat and dry weather continue, what is to prevent additional shocks? Nothing. The electrical conditions will grow every day more and more abnormal. Thus, where the extreme drought and heat is, there, in all probability, will be also earthquakes before the close of the summer of 1887. It was so in South Carolina last year, it has been so in Mexico this. Let us hope that copious rains and thunder storms will harmonize the electrical conditions, confining the dread terre-motus this year in America to its present comparatively narrow limit. As the subject is one of grave interest, I hope to give it special study between this and next issue. Records of extreme heat or dry weather from any section will be received with thanks.

NOTES.

Dangerous forest fires were reported raging in Alger and Marquette Counties, Mich., on May 12. On the 11th, and again on the 15th, 16th, 17th and 19th bush fires were prevalent in the country around Montreal and in Central Ontario. The forecast for the 15th and 16th read: "Hot and oppressive, bush fires prevalent."

On May 9, the thermometer registered 94° in the shade at Brockville, Ont. "Portions of May more like June—perhaps July."

"The May water in the St. Lawrence, Ottawa and tributary rivers will be high this season." So read my forecast in the April number. This has been exactly verified. The wharves at Montreal were partially submerged on May 10, when the water was over the road at Lachine. The height of the upper reaches of the Ottawa were reported as the greatest ever known. Disastrous floods occurred at the same time in New Brunswick and Maine.

To ameliorate these conditions, why not get to work and plant lots of trees? The most sterile wastes might in time be reclaimed if this was properly done. Over 10,000 acres on Cape Cod, which 30 years ago were sandy wastes, are now covered with thriving forests.



Association.

MAY MEETING.

NEW MEMBERS—SUBSCRIBERS TO "ASTRONOMY AND METEOROLOGY" MUCH NEEDED—"SOME RECENT PLANETARY DISCOVERIES"—"APRIL METEORS."

The twenty-third monthly meeting of the Central Committee of the Astro-Meteorological Association was held in the Fraser Institute, Montreal, on Friday evening, May 6th.

Present: Messrs. Walter H. Smith, (Presiding); Secretary J. Brown; Associates: E. W. Beuthner, J. S. Vipond, George Creak, A. J. Pigeon, Sydney Ussher, Mrs. Brown, and Mrs. W. H. Smith.

Letters, regretting absence, were read from Associates Parratt and Bickerdike, after due confirmation of the minutes of the April meeting.

Mr. George Creak, Montreal, having been duly declared elected an Associate, the following were nominated for membership:

By the President: Mr. J. C. Weir, Montreal, and Rev. Peter C. Lawrence, Charleston, S. C. By Associate A. J. Pigeon: Mr. J. W. Davis, Montreal. This being the concluding regular meeting of the season, the newly nominated members—as is customary—were declared elected. Letters expressing great interest in the work of the Association accompanied the applications of the Rev. P. C. Lawrence and Mr. J. C. Weir.

The organ of the Association was discussed. President Smith said:—"Since the last meeting, No. 2 of ASTRONOMY AND METEOROLOGY has been published. Promises to subscribe have, thus far, fallen very much below my expectations, and actual payments are exceedingly few. The cash disbursements, to date, have been \$49.54, the receipts are but \$18.45. There are only 93 numbers ordered. To pay expenses at say \$20 per month, 240 paid subscriptions must be forthcoming. All who have not yet paid, would oblige by doing so. Those who have paid are urged to help on the work by recommending the paper to their friends. A continent with some 50,000,000 people

ought, at the very lowest estimate, to contain 1,000 persons able and willing to subscribe \$1.00 towards a publication of this kind."

One member suggested advertising, but it was agreed that more could be done by individual effort. Another proposed employing a canvasser. This was more favorably received, provided the right person could be obtained. In the meantime it was decided that the paper must go on. The interests of the Association demanded it. Two or three members at once put down their names for extra copies.

Copies of *Smith's Planetary Almanac* having been on view at the Canadian section of the Intercolonial Exhibition, London, a medal and diploma, commemorating the same, had been received by President Smith. These were produced, and greatly admired.

A letter from Mr. Alex. M. Moore, Charleston, S. C., was read. It expressed appreciation of ASTRONOMY AND METEOROLOGY, and a hope that it would prosper. "As for the *Planetary Almanac*," the letter continued, "your predictions seem as if they were made for Charleston. Every change in the weather, changes as you have written it down this Winter and Spring thus far."

Vice-President Plumadore wrote thanking the Central Committee for its resolution of condolence with him, passed at a recent meeting, on learning that he had been burnt out and lost the whole of his household effects.

Associate Lepage wrote, enclosing a newspaper clipping concerning some peculiar astronomical theories of Mr. Rowley Patterson, of Dansville, N.Y.

The President remarked that he had written to Mr. Patterson and obtained a copy of his publication. The theories advanced were certainly remarkable.

The general dryness of April—in accordance with the forecast—"a scarcity of April showers," was noted; Mr. W. S. Wood reporting from Wisconsin, "Precipitation in April extremely light."

The Reading of Papers was now declared in order and several were produced. It being impossible to read them all at one session, two were selected and the remainder left over until an adjourned meeting, to be held on Friday evening, June 3rd.

President Smith was requested to read his paper first. It was entitled: "Some Recent Planetary Discoveries." Its reading gave rise to an interesting discussion. The paper was as follows:—

"Discoveries and additional notes concerning the physical appearance of the Planets are always welcome to astronomers, both professional and amateur. I have made a few notes, taken mainly from 'Ten Years' Progress in Astron-

omy,' recently published in the *Sidereal Messenger*, from the pen of Prof. Young, which I doubt not, will be received with interest.

The most interesting planetary discovery of recent years was, of course, that of Hall at Washington, of Phobos and Deimos, the tiny attendants on Mars. The second in interest was the 'Great Red Spot' on Jupiter, which has been so carefully watched and studied by Prof. Hough, at Chicago.

Taking MARS first, it is unnecessary to describe the discovery of his moons, the account of which is as familiar now as 'household words' to astronomers, it being one of the earliest achievements of the 26 inch equatorial at Washington. The planet's surface has been carefully studied lately, Schiaparelli in 1877 discovering numerous long narrow channels or markings, some of them a thousand miles or more in length, with a nearly uniform width of about fifty miles. From



Appearance of Mars, 1852, Feb. 3.

these observations, Schiaparelli constructed a map, which is different to the earlier chartings of Proctor, Kaiser, and Turby. In 1879 and 1881 these 'canals' were all noticed again by Schiaparelli, as well as seen by Burton and several other observers, so there is very little doubt as to their being permanent markings on our ruddy neighbor. Besides, Dawes, Secchi and others had seen them before in the same places. They were again seen (at Nice) during the last opposition.

The 'Great Red Spot' has made JUPITER the observed of all at every opposition since 1878. The spot was very conspicuous for three years, grew fainter in 1882, was partly covered in 1885 by a whitish cloud, but has since become as plain as in 1882. Prof. Hough has devoted much time to this planet, and believes that some of the phenomena seen on Jupiter will be found to be periodical, similar to the periodicity of the solar spots. He believes that the surface of Jupiter is in a liquid or plastic condition. In the first year of observation, the red spot drifted about 10,000 miles, in the second year 30,000. It is therefore not the solid portion of Jupiter by any means, but rather a great floating island, 29,600 miles long, by 8,300

broad. Prof. Hough has exploded the idea that sudden changes take place on this planet. All that he has noticed have been gradual.



Jupiter, dark transit of a Satellite.

The recent transits of VENUS served to bring her very prominently before the general public, especially during her transit of 1882, which happened at a time favorable for observation as regards the residents of North America. The results of the multitudinous observations and data are not yet ready, and it is still a matter of uncertainty as regards the exact distance of 'Hesperus' from her sister Earth. The most interesting observations recently, were those of Langley, who, during the 1882 transit, saw an illuminated point on the edge of the planet's disk; and those of Trouvelot and Denning, who have succeeded in figuring certain markings on the surface of Venus. Young, and the two last named astronomers, declare in favor of Gruithuisen's old observation of an ice cap, probably marking the pole, and proving that, despite the general belief, the equator of Venus has no such inclination as 50°, much less 60°, as some have imagined. The question of satellites may fairly be said to have been set at rest for good. They do not exist.

A white spot appeared in 1877 on SATURN, allowing Hall to determine the ringed planet's rotation yet more accurately. The result was 10h. 14m. 14s. Recent micrometric measurements do not confirm Struve's proposition that the rings are contracting on the planet. Hall has calculated the mass of the rings as not more than the thousandth part of Saturn, and probably less than the ten thousandth part.

The favorable oppositions of URANUS have allowed the planet to be carefully observed. Its form is decidedly elliptical (about 1.14) and faint belts have been seen by Schiaparelli as well as at Princeton, Nice and Paris. The most curious discovery seems to be that the belts—and of course the planet's equator—are inclined to the orbits of the satellites considerably.

The number of ASTEROIDS have been increased from 163 in 1876 to 264 by the end of 1886. Not one of the new ones is remarkable, and all are smaller than those discovered earlier, the majority being of the 11th and 12th magnitudes. It is thought that but very few remain to be discovered as large as the 10th, but there may be any amount of lesser magnitudes yet undiscovered."

Views of Jupiter showing the changes in his belts and spots were exhibited.

The Secretary's essay on "April Meteors" was then read. Mr. Brown said: "As requested, I have made a search, and can find but a few instances of Star Showers that have been seen during April. *Encyclopædia Britannica* (9th Edition) states that the earliest star shower on record was in the year 687 B.C. On April 20, meteors have been observed which radiate from *Lyra*, and to these the name *Lyrids* have been given. Alexander Von Humboldt, in his *Cosmos* (Page 113, Vol. I.) states that on the 25th of April, 1095, 'innumerable eyes in France saw stars falling from heaven as thickly as hail.' On the 25th April, 1800, a great fall of stars was observed in Virginia and Massachusetts; it was a 'fire of rockets that lasted two hours.' From the *Leisure Hour* for 1877, I have taken the following:—'Meteors as signs of disturbed atmosphere. A marked instance of a meteor preceding a change of weather occurred on Tuesday evening, April 2nd, 1877. The weather had been singularly fine through the day. A few minutes before eight o'clock, when the sky was clear, a meteor made its appearance in *Ursa Major*, and after remaining stationary for a second or two, between *Orion's Belt* and *Sirius*, fell at a comparatively slow rate and in a direct line to the horizon. It was pear-like in shape, seemed three or four times larger than Jupiter, and was intensely bright. Its color changed from a silvery white to a pale red, as it approached the horizon, where it disappeared behind a cloud, leaving a long track of light behind it.'

The only other record I can bring forward was seen in Quebec (as published in our city papers, April 5, 1887.) It read as follows:—'A curious meteor appeared in the sky to the northward of this city (Quebec) about nine o'clock, on Saturday night (2nd April), it shed a very vivid light over the face of the country. It seemed like a globe of fire about a foot in diameter and immovable. After glowing with great brilliancy for about a quarter of an hour, it gradually paled and disappeared.'

This and the foregoing that was seen in London, England, occurred both on the 2nd April—one in 1877, the other in 1887—ten years later.* These latter

* Note by the President.—These evidently belonged to an intermittent stream which, according to Greg., radiate from near *Zeta, Ursa Major*. The radiant point is given by him as R. A. 204°, Dec. 56° N.

appeared singly and the first mentioned fell in showers. Humboldt and other astronomers show they are both sporadic—that is, they appear singly, and traverse the sky in all directions and at other times appear in swarms, moving parallel; and these swarms are periodic, or recur on the same days of the year. Attention was first directed to this fact on the occasion of the prodigious swarm which appeared in North America between the 12th and 13th November, 1833, described by Olmsted, of New Haven. The stars fell on this occasion like flakes of snow, to the number—as was estimated—of 240,000 in the space of nine hours."

In the discussion which followed, President Smith showed how a meteoric display might sometimes foreshow a storm, the meteors being deflected from their paths in space by the movement of a wave of atmospheric pressure. This he illustrated by diagrams.

This allusion to atmospheric waves, caused Mr. Pigeon to remark that the subject had been previously discussed, when papers on "The Motion of Storms" and "Some Recent Weather Relationships" had been read by the President. This remark led to a conversation, which closed with the unanimous request that the former paper be re-delivered at the adjourned meeting. Agreed.

Mr. S. Usher asked for a definition of the terms: "Stars of the first, second, third, and other magnitudes." The President said the terms were arbitrary, all those of the first magnitude not being equally brilliant, any more than all those of the second or third magnitudes, but, generally speaking, the brightest stars were considered of the first, the next brightest of the second, and the third brightest of the third magnitude.

Mr. Creak, by request, exhibited a telescope of 3 inches aperture. A discussion as to its merits, led to its being decided to hold a meeting for observation at Mr. Smith's one evening during the week ending May 28th, when the various instruments owned by members were to be on hand for the benefit of those not possessing telescopes.

The meeting adjourned at 10.

Mr. H. B. Small, of Ottawa, who has made a special study of meteors, is writing a paper on the subject for ASTRONOMY AND METEOROLOGY.

Mr. A. J. Pigeon—considered an authority on optics—has in preparation for reading at next meeting an essay on "How to construct an Astronomical Telescope." This will be printed in next issue, together with numerous diagrams specially prepared by Mr. Pigeon for this journal, illustrating the method of construction.

Planetary Influence.

"I am convinced that there is a very great deal in Planetary Meteorology," was the remark of a respected friend recently. "Your science would be a boon to mankind provided it could foretell definitely the 'sickly' days and the days of 'health;' that is, those times when sickly people are worse and when robust people feel ill, or when strong persons feel yet more robust and the sickly almost well."

I told my friend that I had already made some enquiries into this vast subject, and not only so, but that I had successfully calculated times that had proved "sickly" or "healthful" as the case might be—This and more there is in the science of Astro-Meteorology.

And yet, people still imagine that Astro-Meteorology consists in nothing more than forecasting weather, and that simply from the moon's changes. How erroneous the idea! The moon is, of course, believed to have considerable influence on atmospheric tides and currents. Its orbit is not circular, and, once, sometimes twice in a month, Luna is at "apogee" (farthest from the earth) once, sometimes twice, at "perigee," (nearest the earth). The apogee passages are frequently cold, and the perigees frequently warm. The sudden relaxation from Winter to comparative Spring during the second week in March this year will still be remembered. Navigation opened on the Hudson between New York and Newburg on March 11. The Moon's perigee was on the night of March 9.

It is not right for us unthinkingly to laugh to scorn the ideas put forth by ancient writers. If they had not our superstructure of records, they were at least delving for the foundation whereon we have built, and all they struck was not quicksand. What made such men as Cicero and Pliny consider the planet Mars for instance, as strong in its influence for "rampant weather?" They doubtless saw far more in Mars than his mere lustre, noticing what we have confirmed: that his oppositions and perihelions are frequently accompanied with heated terms, followed as often by reactionary cold "dips." First, Mars attracts from us electricity, afterwards he, so to speak, pours fresh electricity into the earth. Is this theory ridiculous? Is it not rather a sublime arrangement whereby utter stagnation in our oceans of water and air is prevented, allowing them by constant motion to be purified?

I recently compiled a Saturnian-Solar record, taking every aspect of importance from Oct. 17, 1884, to Jan. 9, 1887.

Astro-Meteorology had bidden me expect to find a decrease in temperature. So I did. Of the twenty positions, 18 gave a fall, sometimes amounting to as much as 18° in the minimum and 16° in the maximum record. The lowest reading of the Winter of 1887 at Montreal, was on Jan. 9, the date of Saturn's opposition.

Meteorology.

Montreal recorded its first thunder storm this season on May 24.

The snow was exceptionally deep over Northern New England at the end of March this year.

At West Milan, N.H., on March 4-5, the thermometer fell from 38° to — 33°, or 71° in 24 hours!

The maximum wind velocity at Mount Washington, this March, was 116 miles per hour on 25. The total movement for 25½ days was 23,285 miles.

The first Robins seen in New England this season were noticed at Voluntown, Conn., on March 19th.

March, in Ontario and Quebec, gave an average temperature below the normal.

Canada's minimum thermometer reading during March, 1887, was — 42° below zero at Selkirk, Man., and Savanne, Ont., on 4th. The maximum reading of the month was 64° on the 22nd, at Quamichan, B.C. The highest reading east of the Rockies, was 58° at two stations in Assiniboia, on the 10th and 28th respectively.

Newfoundland (St. John's) reports an average temperature for March of 27° 9', or 1° 5' above the normal. The maximum temperature of the month was 46° on 30, and min. — 7° below zero on 6.

In Ontario and Quebec the precipitation for March was below the average. This was also the case in Nova Scotia and Prince Edward Island. In New Brunswick and Manitoba the precipitation was above the average.

The month of April, 1887, gave temperatures above the normal in the Mississippi Valley, and westward over the Rockies to the Pacific. The comparatively warmer regions were the Central Mississippi and Lower Missouri Valleys, with an average from 3° to 6° above the mean.

April gave temperatures slightly above the normal in Tennessee and Kentucky.

The Atlantic Coast, Upper Ohio Valley and Lower Lake Region, gave mean temperatures this April from 1° to 4° below the normal.

Oshkosh, Wis., reports three coincident solar circles which formed almost instantaneously on the morning of May 4.

St. Louis, Mo., reported a mean temperature for April of 6° above the normal. Omaha, Neb., 4°.

The damage by floods this season in the Chateauguay Valley, Que., alone, is estimated at \$50,000. This flood is ascribed to the denudation of the forests of the Adirondack region.

A slight shock of earthquake is said to have been felt at Iberville, St. Johns, and St. Luke, Que., about 10 p.m. on April 28.

Lake Champlain waters were higher this spring than they have been for fifteen years.

At Albany, N.Y., the mean temperature for April was 3° below the normal.

April at Montreal gave 18 days with readings below freezing, the lowest being 8° on 1. Highest reading 56° 4 on 28, and the mean 35° 46 as against 39° 50 for the past 13 years. Snow fell on 1 day and rain on 11, the former being inappreciable in quantity and the latter to the amount of 3.02 inches. The maximum barometer reading was 30.616 on 8; lowest 29.195 on 29. The prevailing wind blow from the S. W.

Mr. Horne reports snow or rain on 9 days during April in his section of New Hampshire. The month entered cold and went out rainy. Warmest day was the 10th, ther. 60°. Lake Winnepesaukee was not clear of ice until 8 days later than in 1886.

Drought continued throughout April in Southern Texas, and there was also a deficiency of rain from the Missouri valley eastward over Iowa, Northern Illinois, Southern Missouri, Southern Michigan and Northern Indiana. "Gradually spreading North and East, over most of the settled portions of this continent East of the Rockies," as forecast in No. 2 of ASTRONOMY AND METEOROLOGY. There were also slight deficiencies reported from Northern Minnesota and Dakota.

The following places report the April rainfall less than usual: Vicksburg, Shreveport, Montgomery, Little Rock, New Orleans, Mobile, Pensacola, Memphis, Atlanta, Fort Smith, Galveston and Chicago.

A few places, "Suffered from excessive rains." Amongst these being Portland, Me.; St. Paul, Minn.; Huron, Dak.; etc.

April, in Wisconsin, Mr. Wood reports the coldest for the past three years; the noon record giving the following means: 1887, 53°.12; 1886, 57°.24; 1885, 62°.07, and 1884, 51°.04. The max. of April, 1887, at Shawano was 79° on 9 and min. 20° on 4. He also furnishes the

following interesting comparisons of the temp. of the first and last days of the month: 1887, first day, 50°; last day, 58°; 1886, first day, 35°, last day, 66°; 1885, first day, 36°; last day, 56°; and 1884, first day, 34°, last day, 68°. Precipitation was extremely light. Light snow on 4 and 23. No prevailing winds.

The Minnesota Signal Service Report for April, sent me by Mr. Brandenburg, of St. Paul, is very complete. From it, I learn that April 1887 was notable there for its heavy gales, a temperature slightly above the normal, and severe thunder storms. In Southern Minnesota the seeding of small grains was generally finished by the close. Vegetation was however severely checked by cold on 25 — 26. Seeding by this time was well advanced in the Northern counties. The mean temperature was 44°.1' or 3°.4' below that of April 1886, but 1°.5' above April 1885. The lowest temperature, was 3°.6' below zero at St. Vincent on the 4th. The highest temperature was 88° at Sherburne on the 30th. The average precipitation was 2.23 inches, or 1.43 less than April, 1886. The verifications of the probabilities sent out, amounted to 86 per cent for weather and 78 per cent for temperature.

At Worcester, Mass., on May 15th, according to Mr. J. B. Hall, the season was about three weeks late. On Friday morning, May 13, there was a slight frost, bearing out my forecast for that date of "Local frosts, fine."

As an instance of the difference of temperature prevailing at places almost "next door to one another," the following is of interest:—The Hampshire (Mass.) Natural History Society recently established a number of thermometer stations in Northampton, at points about one-fourth of a mile apart, and all within the radius of one mile from the Post Office. The stations were 9 in number, with altitudes ranging from 125 to 285 feet above the sea. The highest gave a mean of 29° and the two lowest means of 27° and 29°! The third highest (182 feet) gave the highest mean (30°.2'). The minimum readings ranged from — 3° below zero to 7° above, and were not all on the same date! The maximums ranged from 47° to 52°, the lowest being recorded at one of the least elevated stations.

Mr. Birt sends the following summary of his observations for the first three months of 1887 from Utica, N.Y.: January, max. therm. 47°, min. — 20° below zero; mean, 20° 9'. Max. bar. 30.22; min. 29.75; mean, 29.79. February, max. therm. 41°; min. — 5° below zero, mean, 22° 1. Max. bar. 30.22, min. 28.40; mean 29.28. March, max. therm. 54°, min. 0°; mean, 23° 1. Max. bar. 29.94; min. 28.50; mean, 29.30.

YEARS OF HEAVY SNOWFALL.

It has been asserted that the past winter gave a heavier snowfall at Montreal than any previous one. This is not true. The heaviest month this year was January, when 50.1 inches fell. On January 17-18, 1827, however, between 60 and 70 inches fell during the 48 hours. The roads were, in consequence, drifted 15 feet deep. During the winter of 1868-9 no less than 177 inches sifted down. The two years are given below for purposes of future comparison:—

SNOWFALL AT MONTREAL.

1868-9.		1886-7.	
	Inch.		Inch.
October.	4.9	October.	0.5
November.	17.3	November.	36.1
December.	28.0	December.	22.4
January.	28.1	January.	50.1
February.	73.7	February.	34.1
March.	25.0	March.	31.1
Total.	177.0	Total.	174.3

The mean for the past 12 years was 121.6 inches.

Correspondence.

[All letters should be addressed.—"Walter H. Smith, 31 Arcade Street, Montreal, Canada." For a personal reply, enclose stamp.]

THE "WORLD OF MARS."

[9.] Is all the MSS. of "Seybold Melvin, or the World of Mars," written? If so, how many chapters are there?

INQUIRER.

Ans.—"Inquirer" might as well have signed "Inquisitive." "Seybold Melvin" is all written. At present it is divided up into forty-four chapters.

AN EXCELLENT REPORT FROM MASSACHUSETTS.

[10.] People make funny remarks about your *Almanac* here. They say you make the bad weather just to sell the book. A lady, however, writes me from Woonsocket, R.I., who has had your *Almanac* the past two years and she thinks it "splendid, could not do without it." Others here say the same thing. Your forecasts tell so very true. I have sent copies up into Vermont, as well as out West, the very last one went yesterday to Sedalia, Mo. One man walked eight miles after one only this week, and an old man of 85 walked three miles for it last year, so as to know when to plant onions. All he planted at the times you calculated were beautiful. I intend to sell 100 more this Spring, every family ought to have one. I promised to relate some experiences about planting. Mr. G. B. used to have no success with cucumbers and had to buy them. I told him to plant when you calculated, and he would get enough. He did so, and the result was he had all he wanted to eat,

and all he wanted to pickle besides. Mr. C. was going to plant pole beans last summer, I told him to wait and try your time, but he would plant "just two rows." I took and planted the rest nearly two weeks later at the time you calculated. They came up, caught up with his and were ready to pick just as soon, with more beans on the poles. I also planted peas and sweet corn at the times you gave in the *Planetary Almanac*. All did well. Lots of peas. I planted flower seeds also, and got lots of flowers, everything making the most vigorous growth. I would not now like to be without the book. Send me ASTRONOMY AND METEOROLOGY.

Winchendon, Mass. Mrs. M. A. C.

"ENJOYED EVERY WORD OF IT."

[11.] In a bundle of papers forwarded me, great was my surprise and delight to behold the first—but I trust not the last issue of your now monthly. I enjoyed every word in it. You can count on one subscriber, and more if I can secure them. I was much interested in your paper on "Pre-historic Astronomy," following the discoveries of the shepherd astronomers with unwearied diligence. I think I see the footprints of another life in Seybold Melvin's love for planetary observations. I most sincerely hope the monthly will be a success. It ought to be a welcome visitor to many.

Hamline, Minn.

C.B.M.

ASSOCIATION QUERIES.

[12.] Please state: (1) When the Astro-Meteorological Association was founded. (2) The names and addresses of its officers. (3) How many members it has. (4) Who are eligible for membership. (5) How can I become a member. (6) What are the fees. (7) Has the Association any special objects in view, and if so, what are they.

A WOULD BE A. A. M. S.

Ans.—A prospectus giving most of the information you seek, is sent free on application. (1) On October 29, 1884, at Montreal. (2) President, Walter H. Smith, 31 Arcade Street, Montreal, Canada; Vice-Presidents, Richard Mansill, Rock Island, Ill.; Edward F. Test, Omaha, Neb.; N. Plumadore, Asheville, North Carolina; L. J. Heatwole, Dale-Enterprise, Virginia; B. F. Kirkpatrick, Harrisonburgh, Va.; Council, J. Fulton, M.D., Montreal; W. J. Webster, Montreal; Maria T. Cole, Malone, N. Y.; B. C. Murray, Denison, Texas; T. H. Turton, Montreal, and Right Rev. B. B. Ussher, Montreal; Secretaries, J. Brown, Montreal; C. H. Brunk, Dale-Enterprise, Va.; J. Stone, Asheville, N. C.; Treasurer, M. Austin, Montreal. (3) Seventy-seven. (4) All persons interested in the study of Astronomy, Astro-Meteorology,

(sometimes called Planetary Meteorology) Meteorology, and their kindred sciences. Ladies and gentlemen are equally eligible. (5) By sending a written application to the President, who nominates applicants at the meeting next following. (6) One dollar per annum, payable in advance on election, and annually in advance thereafter. (7) Certainly. By-law No. 2 reads:

"The general aim of the Astro-Meteorological Association shall be to examine into the various pre-supposed influences of the heavenly bodies upon each other, and especially upon the various elements and constituents of this earth, in order to establish rules for future guidance in forecasting the weather, seasons, times of plenty, seasons of dearth, times proper for planting and ingathering of crops, periods of sickness, health, etc., as well as to promote the study of the sciences of Astro-Meteorology, Astronomy and Meteorology."

THAT EDITOR'S FORTE WAS NOT ASTRONOMY.

[13.] Your *Almanac* calculations are made out with care and accuracy, and I therefore solicit your opinion concerning what I met with in the "Educational Department" of a certain weekly paper. The question was as to "how the distance of the Sun is determined." The answer ran:—"There are many ways of determining the Sun's distance. (1.) From the transit of Venus; (2.) From the shadow the Earth throws upon the Moon; and (3.) From the *Transit of Mars*." It is to this last statement that I object. Who ever saw from this Earth a "transit of Mars?" It is impossible. Am I right? If that would-be instructor had said Mercury, he might have been correct.

Sunnidale Corners, Ont. A. B.

Ans.—You are quite right. A transit of Mars is impossible as viewed from the Earth, the orbit of Mars lying outside ours, and Mars cannot, therefore, by any possibility, come between us and the Sun. If you are familiar with the routine of a printing office, you will understand that beside the Editor, who evidently only knew enough to transcribe, parrot fashion from a book, and even in so doing made a grievous mistake; several others, such as the corrector, proof reader, etc., must have been equally ignorant concerning one of the simplest facts of astronomy. To get rid of a little of this blackness of darkness is one of the leading objects of my publishing ASTRONOMY AND METEOROLOGY.

A CLERGYMAN'S WISH.

[14.] Enclosed is \$1.00, as one year's subscription to ASTRONOMY AND METEOROLOGY, which I hope may go on and prosper.

Prescott, Ont.

(REV.) G. B.