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JUNE, 1897.  
VOL. XI, No. 3.

# THE OTTAWA NATURALIST.

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Published by the Ottawa Field-Naturalists' Club

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# THE OTTAWA NATURALIST.

VOL. XI.

OTTAWA, JUNE, 1897.

No. 3.

## "WEATHER."

By OTTO J. KLOTZ,  
President of the Ottawa Literary and Scientific Society.

*(Continued from the May number.)*

The North-West is the breeding ground of our "cold waves." In connection with anti-cyclones there prevail, however, from time to time, especially in the winter months, severe storms of wind, either with or without snow. When accompanied by snow they are popularly known as blizzards. It may be interesting to state in connection with the etymology of this word, that among one of the first to mention the blizzard was Henry Ellis, who made a voyage to Hudson's Bay in the ship "California" in the year 1746 and wintered near York Factory. In addition to regular storms of low and high barometer, there are other atmospheric disturbances, generally known as local storms, such as hail, thunder and dust storms. From the concentric layers which a hailstone usually presents, when cut in two, one infers a growing process in which the stone passes at last as many times as it has separate layers from a stratum of air having a high temperature to one having a correspondingly low one. This process would involve a vortex motion, in which the stone is alternately drawn in and thrown out of the vortex and finally, by increasing weight, falls to the earth. It is well known that hailstorms follow a path whose breadth is very narrow compared with its length. In thunderstorms we have another element—electricity—entering our meteorological phenomena. It has been shown that the geological character of the soil has much to do with the frequency of lightning strokes, the proportions being one for a chalk bed, seven for clay, nine for sand, and twenty-two for loam. Oaks are most often and beeches least often struck, and nearly always in the clear or at the forest's edge. The risk of houses being struck increases with segregation and height, and is five times greater in the country than in the city districts. In very dry countries during the rainless season local whirlwinds occasionally pass over limited sections, the disturbance being similar to that of a feeble tornado. The haze peculiar to the season known as Indian

summer is simply a dry fog where the impurities in the atmosphere remain a long time owing to the absence of rain. The greater part of the impurities are from forest fires.

Of atmospheric optics a few words may be said. Of these the most familiar phenomenon is the rainbow. It is simply a color sensation due to the double refraction and reflection of the sun's rays by globules of water situate in the surface of a cone of which the eye is the apex. The higher the sun the lower the bow, and the greatest bow possible is a semi-circle, when the sun is just rising or setting. Theoretically no two observers see the same rainbow, for the bow has no real or material existence.

Rings around the sun and moon are divided into two classes—the corona of small diameter and the halo of greater diameter. The corona is a diffraction phenomenon, while the halo is due to reflection and refraction of the light by the ice crystals or ice needles in the higher regions of the cirrus clouds. There is a great variety in the distribution of halos—sometimes the rings are wholly separate and sometimes they intersect. The points of intersection are usually more or less light patches, and are called mock suns, or sun dogs or parhelia; for the moon, paraselenae.

When one layer of air lies in contact with another of different temperature and density, the bounding surface between the two, if sharply defined will reflect light perfectly and hence images of objects become visible. This phenomenon is called mirage, and I have frequently seen it in the Alaskan archipelago and less frequently on the plains of our North-west.

There is no problem in the wide range of science in the public eye that admits of so ready solution as weather. Is the pseudo-scientist, the charlatan,—who surrounds himself with a halo of scientific terms, favorite ones being opposition and conjunction of planets—writes of astronomical computations, et cetera, that misleads the public through his bold and at times

alarm-spreading prognostications. The scientist, with his able army of assistants spread over a continent, dares scarcely predict 48 hours in advance, yet the charlatan, scorning observations, with one bound leaps over weeks and even months and there plants his weather signal. Let us turn for a moment to some of the superstitions and fallacies regarding weather. As far back as 1508, not long after the invention of printing, a book was published in Germany under the title of the "Bauern Practik" or "Husbandman's Practice," as its translation was known in England. It taught the farmer, the sailor, all, indeed, who were interested in the weather what would be its character, not only for the coming year, but in all future years. Christmas is the chief radiant point upon which the prognostications depend. Plenty, peace, war, drought, rain, honey, wine, corn, follow according as Christmas is fine or cloudy, and if the sun rises obscured or if he sets obscured, or if Christmas falls on a Sunday or some other day of the week and so on. In a less degree the 12 days following Christmas, i.e., to Epiphany, had a mystic influence on future weather and affairs of life.

There are said to be forty weather saints, among the most prominent of whom is undoubtedly St. Swithin, whose day is July 15th, and the superstition is that if it should rain on that day it will rain for forty days after. In order to see this belief fulfilled I would suggest migration to southeastern Alaska, where forty, fifty or sixty days' rain can be had on short notice.

Of the heavenly bodies for forecasting the weather the moon has ever held pre-eminently first place not only by the people but by the self constituted prophets, who, under the protecting shield of astronomy, profess to have framed infallible rules for the weather as judged from the ever varying position of the sun, moon and planets.

By careful examination of thousands of accurate barometric observations distributed over the globe we find that whatever

so-called reason, analogy and common sense may seem to dictate, the facts will not follow in the path marked out for them ; and the atmospheric tides refuse to ebb and flow, except in a most infinitesimal degree, quite disproportioned to their supposed moving forces.

Fallacies about the moon are numerous, such as that the full moon clears away the clouds ; that you should only sow beans or cut down trees in the wane of the moon ; kill hogs and beef when the moon is waxing ; set fence posts when she is waning so as to draw down and not heave ; that to see the old moon in the arms of the new brings on rain, as also the halo rain or snow, and so forth.

About the sun also there are many fallacies, and ever since the discovery that the spots which appear on his surface have a period of greatest and least frequency, there have been theorists in shoals who have sought to prove that this fact rules the weather. It has undoubtedly been found that the frequency of sun spots and the variations of the magnetic needle are intimately connected ; and it is almost equally well established that the aurora appears in some sort of sympathy with the sun spot variations. But this, up to the present, is as far as we can get in this direction, for our weather seems to have no definite relation to these changes.

It has often been stated that the noise of cannon will produce rain, and that great battles in consequence of the introduction of gunpowder have been followed by rain, but this opinion is not proved by facts.

So firmly and widely rooted is the belief in the practicability of weather forecasting, that separate bureaus for this purpose have been formed and are maintained at public expense in Great Britain, the United States, France, Germany, Italy, Russia, Algeria, Australia, India and Japan. Other nations, such as Sweden, Holland and Switzerland, co-operate with and share the expenses and benefits of other larger countries

We in Canada have not a separate weather bureau, the Meteorological Service being under the Marine and Fisheries Department. However, it is very efficient and compares favorably with the best anywhere. The proof of this statement rests on the fact of the very high percentage of weather forecasts that are subsequently verified.

In passing, let me say that the head office of the Meteorological Service should be in Ottawa, where the head offices of all other branches of the public service are. There is no doubt that its efficiency could thereby be increased, and we would simply be following what other countries have done and found advantageous. In England London, (Kew) ; in the United States, Washington ; in France, Paris ; in Russia, St. Petersburg, are the central stations. The idea entertained in some quarters that it should be at some port on account of the shipping interests, to give warning to vessels, is not sound. What above all things the central station requires is a good telegraph service, in the first place to receive the bi-daily weather reports from all over the continent, and in the second place to send out in all directions the weather forecasts. A good telegraph service being granted our weather office might be in Muskoka, however, as before stated, for administrative purposes, it should be in close touch with the Department to which it belongs, and hence in Ottawa.

All skilled meteorologists realize how comparatively local are weather conditions and how impossible it is at times to make prediction for a definite period with any feeling of certainty. The forecaster, then, has to bear in mind that weather conditions are largely local, due to topographical features already spoken of, and so must study with such fact prominently in view the configuration and physical outlines of a country which have such important bearings on the development, progress and movement of storms as to render it essential that the predictor shall have

the country, as it were, actually before his eye, instead of the flat map on which the data are charted.

The official may know and predict accurately the general direction in which a storm will move, and yet in thickly populated parts, as western Ontario, the passage of a storm only twenty miles to the northward or the southward of the point fixed in advance by the forecaster will result in weather conditions which must disappoint thousands of people who are interested therein. The narrow difference of a few miles in predicting twenty-four hours in advance the path of a storm which travels 600 or 700 miles daily is almost infinitesimal as regards the storm itself, and yet it is sufficient to produce cold northerly winds, with snow, in place of warm southerly winds, with rain, or vice versa.

The introduction of the telegraph made it possible to collect meteorological data from a large section of country in time to make it of use in following the weather changes over a whole region at the time the events are actually taking place, and also to transmit storm warnings in advance of the approach of a storm. The telegraph is to the meteorologist what the telescope is to the astronomer. Thus we follow the movement of cyclones and anti-cyclones and their accompanying weather conditions across the country in much the same manner that we can follow the movements of a railroad train if we know its time and place of starting, and its route and speed. But the cyclones or storms vary so much in intensity, in the paths which they take, and in their velocity of movement, that their positions and conditions can usually be foretold only day by day. Once having fixed the position of a cyclone or anti-cyclone with regard to any place, we know the general weather conditions at that place as shown by the distribution of the meteorological elements in cyclones and anti-cyclones.

The daily weather maps are prepared in the following

manner:—There are distributed over the United States and Canada about one hundred and forty first-class stations, i.e., such that report twice daily, at 8 a.m. and 8 p.m., eastern standard time, to Washington and Toronto. Let this be clearly understood that over the continent, from the Atlantic to the Pacific, from Manitoba to Texas, twice daily at the same absolute instant, the meteorological phenomena are noted and are immediately wired to Washington and Toronto, which mutually send data received. Each central office has then a meteorological photograph, so to speak, of the continent. The skill of a weather predictor arises largely from his alert comprehensiveness of mind, accurate and retentive memory, phlegmatic but confident temperament, and long experience in connection with the discussion of storms for the section of the globe and the period of the year for which he predicts. The first of these qualities enables him instantly to grasp the situation and promptly draw correct general inferences from slight indications; the second renders it possible for him to recall, with their sequences, similar weather conditions—a very important matter—when they are typical; the third enables him to maintain unimpaired his confidence in his own ability and judgment when he has made a series of unsuccessful predictions. Experience, the last but not least, is most necessary, since the attendant circumstances of storms change so materially, even from one season of a year to another, that a forecaster skilled in summer storms may fail at first in discussing those of the winter.

Let us consider briefly the value of forecasts. We will be within bounds if we make the sweeping statement that every individual is either directly or indirectly benefited by the forecasts. The value of the forecast in agriculture is self evident, and at times of harvest, when the labors of a year may be wasted in a day, the importance of the forecast is strikingly noticeable. The value of the weather bulletin is in direct proportion to its distribution and receipt by those interested. From

the very nature of farming, the necessary isolation of a farmer he will always be at a more or less disadvantage in obtaining the daily predictions compared for instance with another very interested party—the ship captain, who, when in port, is in direct contact with the telegraph service and weather bureau, and can govern his departure accordingly. Bankers and brokers appreciate and watch closely the forecasts. Obviously whatever affects crops, commerce, or business and industry affects them. Commission merchants and shippers of produce of a perishable nature find the forecasts of the greatest assistance. In maintaining equable and comfortable temperatures in large office buildings, for example, the predictions are of the greatest value if intelligently read.

In no branch of human affairs can the value of forecasts be so readily expressed in dollars as in shipping. For here we can easily find out at any time the number of vessels in port, and the number detained by storm warning from going to sea and exposing themselves to the furies of storms and tornados with possible utter destruction. The annual saving in this way to navigation on this continent runs into the millions, and in this interest alone the cost or outlay of the meteorological service is returned manifold. Frost warnings are of great importance. Thus, during the latter part of the season of 1891, just at harvest time, when the wheat crop of Northern Dakota and Northern Minnesota required a week or ten days to mature, extensive preparations were made by farmers to avert injury from frost. Material for smudge fires was collected and made ready to be fired upon receipt of the frost warning. Through the co-operation of the telegraph companies the warnings were widely disseminated and at the proper time the fires were lighted, and many million bushels of wheat saved. This was in the far north. In the far south in the same season 75 per cent. of the vegetable and fruit crop was protected by smudge fires kindled at the

approach of cold weather. Cattle men in the west find the warnings of great value. Cranberry growers as a class have special warnings sent to them. Within the last year or so, in the fall of the year with the approach of winter, the Washington office issues a chart showing the snow line or the southerly limit where the snow has fallen. With this information in hand the wholesale dealer in rubber shoes or other footwear directs his commercial travellers where to go in order to meet with most success. The Director of the Weather Bureau at Washington told me recently of the great favor this addition of snow line on the charts found in commercial centres.

Ice men, especially those farther south than Ottawa, where the boreal fruit does not obtain such large dimensions, know of the practical value of forecasts, as for instance in 1891 they harvested their ice before it had reached the average thickness because of warning of a thaw. Enough of references have been given to show the great pecuniary value of forecasts. The Meteorological Service is essentially a paying investment by the Government.

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At the close of the lecture Mr. Klotz had some weather maps, kindly loaned by Mr. R. F. Stupart, Director of the Meteorological Service, thrown on to the screen. By means of the map, isobars were explained, together with the areas of high and low barometer; several storms were traced in their daily course across the continent, disappearing in the Atlantic. A West India hurricane was traced up the Atlantic coast.

In speaking of rain the lecturer said that all available records of precipitation had been unable to verify the belief held by some that deforestation affected the annual rainfall. If it is affected the effect is wholly masked by other and greater influences. However, deforestation shows its effects markedly in other directions, especially in floods and in local climatic conditions.

The graphic representations given greatly elucidated much of the subject treated in the lecture, especially with reference to the method of making the daily forecasts or "Probs."

*References:—*

- GREELY: American Weather.
- WALDO: Meteorology.
- INWARDS: Presidential Address.

## BIRD NOTES FOR MAY.

During the month of May many of our most beautiful birds make their first appearance ; the warblers, especially in the early part of the month, arriving in considerable numbers and variety. Those birds which come in the early spring have made their nests and are now busy rearing their young, and in some cases the latter have already flown. Mr. White reports that the young of the robin and the purple grackle were able to fly on the 29th, and young tree swallows, golden-winged wood-peckers, and blue-birds would probably leave the nests a few days later. Forty-one different species of birds have been observed this month :

*White-crowned Sparrow*—One seen by Professor Macoun on the 3rd. The next record is the 9th, when it was seen by Miss Harmer ; it also appeared in flocks at the Experimental Farm on that date. Mr. Kingston saw it first on the 10th and last on the 16th.

*Purple Martin*—Mr. Kingston, whose report was received too late for the last number, saw this bird on the 24th of April. It was next seen by Mr. Lees and Mr. White on the 3rd.

*Wild Goose*—Miss Harmer reports this bird as being still here on the 3rd.

*Least Fly-catcher*—Seen by Mr. Lees on the 6th.

*Pied-billed Grebe*—Seen by Mr. White on the 8th.

*Wilson's Snipe*—Seen by Mr. White on the 8th.

*King-bird*—Seen by Mr. Kingston on the 9th and by Mr. White on the 10th.

*Summer Warbler*—Miss Harmer, Mr. White, and Mr. Macoun saw this bird on the 9th, and Mr. Lees on the 10th.

*Black and White Warbler*—Seen by Mr. Kingston and Mr. Macoun on the 9th and by Mr. White on the 10th.

*Rose-breasted Grosbeak*—Seen by Mr. Kingston on the 9th.

*Broad-winged Hawk*—Seen by Mr. White on the 9th. Mr.

Kingston saw this bird on the 16th of April, but his record was received too late for the May number.

*Goldfinch*—Mr. White saw this in full breeding plumage on the 9th.

*Night Hawk*—Heard by Mr. Small on the 9th, but not seen until the 16th by Mr. Kingston.

*Wood Thrush*—Seen by Mr. White on the 9th.

*Red-breasted Nuthatch*—Seen by Mr. Kingston on the 9th.

*Rusty Grackle*—Seen by Mr. Kingston on the 9th.

*Yellow Palm Warbler*—Seen by Mr. Kingston on the 9th.

*Blackburnian Warbler*—Seen by Mr. Kingston on the 9th. Mr. White and Mr. Lees both saw this bird on the 10th. Mr. Lees reports that he saw several in the shade trees in different parts of the city, and Mr. Kingston says that they were unusually abundant this year.

*Black-throated Blue Warbler*—Seen by Mr. Kingston on the 9th, and by Miss Harmer and Mr. Lees on the 10th.

*Whip-Poor-Will*—Seen by Miss Harmer on the 10th.

*Oven Bird*—Seen by Mr. White on the 10th.

*Black-throated Green Warbler*—Seen by Mr. White on the 10th.

*Chestnut-sided Warbler*—Seen by Mr. White on the 10th.

*Magnolia Warbler*—Seen by Miss Harmer on the 10th.

*Nashville Warbler*—Seen by Mr. White on the 10th.

*Parula Warbler*—Seen by Mr. White on the 10th.

*Baltimore Oriole*—This bird was seen by Dr. Fletcher on the 25th of April, but was not observed by Mr. Kingston until the 9th, and by Miss Harmer, Mr. Lees, Mr. White, and Mr. Macoun on the 10th. Mr. Small saw it on the 11th.

*Ruby-throated Humming Bird*—This beautiful little bird was first seen by Miss Harmer on the 10th. During the latter half of May it was quite abundant at the Experimental Farm, the large number of flowering shrubs and plants offering special attractions.

*Olive-backed Thrush*—Seen by Mr. White on the 10th.

*Warbling Vireo*—Seen by Mr. Lees on the 10th.

*Red-necked Grebe*—Seen by Mr. White on the 10th, a male bird being in full breeding plumage.

*Red-eyed Vireo*—Seen by Mr. Kingston on the 11th.

*Cat Bird*—Seen by Mr. White on the 11th, and by Mr. Lees and Mr. Macoun on the 12th.

*Pine Finch*—Mr. White saw four of this winter bird on the 11th, and Mr. Kingston saw it on the 16th.

*Bobolink*—Seen by Miss Harmer on the 12th.

*Red-headed Woodpecker*—Seen by Miss Harmer on the 15th.

*Redstart*—Seen by Miss Harmer on the 15th.

*Maryland Yellowthroat*—Seen by Mr. Lees on the 17th.

*Mourning Warbler*—Seen by Mr. White on the 20th.

*Bay-breasted Warbler*—Seen by Mr. White on the 20th.

*Cape May Warbler*—Seen by Mr. White on the 20th.

*Wilson's Warbler*—Seen by Mr. White on the 20th.

*Canada Ruffed Grouse*—Seen by Mr. Kingston on the 22nd.

*Truill's Fly-catcher*—Seen by Mr. White on the 22nd.

*Swamp Sparrow*—Seen by Mr. Lees on the 23rd.

*Black-poll Warbler*—Seen by Mr. White on the 23rd, and by Miss Harmer on the 25th.

*Canadian Warbler*—Seen by Mr. White on the 27th.

*Black-billed Cuckoo*—Seen by Mr. White on the 27th.

*Olive-sided Fly-catcher*—Seen by Mr. Kingston on the 27th.

#### NESTING OF BIRDS.

But few notes have been received regarding the nesting of birds. At the Experimental Farm we have twenty or more species breeding this summer. On the 17th Mr. Craig found a nest of the Brown Thrush in a Norway spruce hedge with four eggs in it. The brown thrush has been a regular visitor to the farm for several years. Meadow-larks, bobolinks, and vesper

sparrows are breeding in the meadows, while the forest belts and ornamental trees and shrubs afford very suitable nesting places for a considerable number of other species. Miss Harmer sends the following notes:—

“A chipping sparrow has built its nest in an old Christmas tree that stands in a corner near the door of a house where a family of young children run in and out, even flying unto her nest, with three eggs, when they are near.

“I found a song sparrow's nest at the end of a tunnel six or seven inches long, made by burrowing under some long dead grass which formed a roof that looked almost rain-proof over the nest with young.”

W. T. MACOUN,  
*Associate Editor, Ornithology.*

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#### CARP CULTURE.

In driving through the township of Louth, near St. Catharines, Ont., a short time ago I was much interested in observing a well stocked fish pond on the fruit farm of Mr. J. H. Broderick. The pond though artificial, is situated in a natural depression near the bed of a small brook. The construction was in a measure accidental and came about in this wise some years ago, Mr. Broderick allowed a company of gas prospectors to make borings at this place. As a result of the borings water flowed more freely than gas, although the latter was obtained in sufficient volume to supply fuel to Mr. Broderick's house. The flow of water being constant an area of about 1-10 of acre was excavated and dammed. The subterranean supply of water of a temperature some degrees above freezing prevents the formation of thick ice in winter and obviates danger to fish life from severe frost. Four years ago Mr. Broderick stocked his pond with 60 individuals of the carp tribe (*Cyprinus*). He

states that the stock was about evenly divided as to numbers among the three so-called varieties: Leather, Scale, and Mirror. (Are these recognized varieties?) The increase since that time has been remarkable. The water is now fairly alive with fishes of various sizes. Mr. Broderick occasionally entertains his friends by feeding his pets with large slices of bread (without butter). This food is actively contested for by dozens of the smaller members of his fish family till the dimensions of the large pieces have been somewhat reduced, when they suddenly disappear from sight, being carried below, by a two or three pound veteran representing one of the pioneer settlers of the pond. Mr. Broderick does not claim that the carp is equal to pickerel as a table fish, but says that it is much superior to the common sucker in this respect. These fishes have not been fed regularly and long intervals occasionally elapse, when they are entirely dependent for food upon their own foraging efforts.

J. CRAIG.

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#### FIELD DAY AT CHELSEA.

On May 22nd the club held its first excursion of the season. Some difficulty is always experienced in selecting suitable ground for the first outing. Chelsea, on account of its elevated woods with sheltered southern exposures, offers special inducements to the botanist. It was therefore chosen for this reason and owing to the fact that it is easily reached by the Gatineau Valley Railway. This excursion, like others held by the club to Chelsea was very successful. It was attended by about 190 adults and 80 children. The President, Prof. Prince was in charge.

Among the leaders who gave short addresses before leaving the grounds were Dr. Fletcher, entomology; Mr. Kingston, ornithology; Mr. R. B. Whyte and Prof. Macoun, botany; Mr.

Wilson (Geological Survey), geology ; Mr. Cowley (Collegiate Institute), "educational value of field day excursions."

A gratifying feature of this excursion lay in the fact that it was largely attended by students of the various educational institutions of the city. The Collegiate Institute and the Normal School were well represented as well as Coligny College and the Harmon School.—J. C.

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### THE SIXTY-SEVENTH ANNUAL MEETING OF THE BRITISH ASSOCIATION

TO BE HELD IN TORONTO AUGUST 18-25, 1897.

The executive of the British Association for the advancement of Science has again decided to hold one of its yearly meetings in Canada. Upwards of 500 men are expected to come from Great Britain and Ireland for the meeting to be held in Toronto in August, which promises to be one of the most successful ever held. Lord Lister, Surgeon Extraordinary to the Queen, is the retiring President. He will be succeeded by Sir John Evans, one of the world's most famous anthropologists and a noted antiquarian. Lord Kelvin, better known on this side of the Atlantic by the name of Sir William Thompson, Sir Wm. Turner, Profs. Poulton, Oxford ; Ramsay, London ; Michael Foster, Cambridge ; Marshall Ward, Cambridge ; Bower, Glasgow ; Profs. Miall, Farmer, Ayrton, Scott, Unwin, Milne, Sclater, and a host of other noted men have signified their intention of being present. Besides these it is expected there will be at least 1,500 others, partly from Canada, partly from the United States, and partly from the continent of Europe. The University buildings in Toronto and the Legislative Assembly Room, together with Massey Hall and other buildings will be the centre of the meetings. The following are the sections represented :—Mathematical, physical, anthropological, chemical, geographical, zoological, botanical, economic science, mechanical and geological.

Public meetings will be held in Massey Music Hall and lectures by Sir John Evans, Prof. W. A. Roberts Austen, Prof. Forbes, and Prof. Milne.

A number of interesting excursions have been organized to places of interest, including the largest cities and Niagara, Muskoka and the Rocky Mountains.

The local arrangements are in the hands of a number of efficient committees, Dr. A. B. Macallum, Mr. B. E. Walker, Prof. R. Ramsay Wright and a host of others, taking an active part in the preliminary work which involves much labour and preparation. There is no doubt that the meeting will be an exceptionally interesting and important one, judging from the programme and papers, as well as from the list of those who are in charge of the various sections.

Ottawa ought to send a large contingent to the B. A. meetings in Toronto. Several members of our various scientific bodies and departments at Ottawa have signified their intention of being present, and everyone interested in the advancement of science in Ottawa ought to join the Association either as a regular member or as an associate member. Ladies as well as gentlemen may become members of the British Association for the Advancement of Science.

H. M. A.

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### OBITUARY NOTICES.

THE LATE N. J. GIROUX, C.E., F.G.S.A.

The following sketch of the life and work of the late N. J. Giroux, C.E., F.G.S.A., a talented member of the Field Naturalists' Club, appeared in the pages of the Bull. Geol. Soc. Am., vol. 8. For many years Mr. Giroux acted as assistant to Dr. Ells, of the Geological Survey, to whose pen geologists and the members of the club are indebted for the following notice :

“ It is with feelings of very deep regret that we have to

announce the somewhat sudden death of one of our members, Mr. N. J. Giroux, of the Canadian Geological Survey, Ottawa, which occurred at his father's house in River Beaudette, Province of Quebec, on the 30th day of November, 1896. Mr. Giroux was held in high esteem by all his confreres on the staff, and aside from the general feeling of regret at his unexpected death, his loss at this time is especially unfortunate, since the results of his last two years' work in the interesting area between the lower Ottawa and the Saint Lawrence, in the study of which he has recently been engaged, were nearly ready for publication and would have made a very valuable contribution to our knowledge of this interesting field, both as regards the distribution and the fossil contents of the Paleozoic formations of the Ottawa basin.

Mr. Giroux was born at River Beaudette on October 22, 1859. He graduated from l'Ecole Polytechnique, Montreal, in affiliation with Laval University, in 1880, taking the degree of C.E. from that institution and the gold medal for standing in his year. After a year in the North-west Territories, in connection with the Dominion Lands Survey, he was engaged as assistant engineer on the Grenville Canal, leaving that work in 1883 to join the staff of the Geological Survey of Canada as assistant to Dr. Ells. In this capacity he did much excellent work for some years, and in 1890 took charge of surveys in the rough countries north of the Saint Lawrence, in the vicinity of the Saint Maurice waters. After three years in this arduous field he took charge of his last field of work, to the south of the lower Ottawa river, which he was rapidly bringing to completion when his labours were cut short by his death.

Mr. Giroux's principal publications have appeared in his summary reports of progress, which are issued in connection with the annual reports of the Geological Survey. The five volumes, 1891-1897, contain his writings. Among other papers is

one on the serpentines of Canada in the Transactions of the Ottawa Naturalist ; but he had laid well the foundations for an active and useful life, which would doubtless have been productive of valuable results to the scientific world, and his death is therefore regarded as a very serious loss to the field staff of the Geological Survey of Canada."

THE LATE PROF. E. D. COPE, OF PHILADELPHIA.

Edward Drinker Cope, Ph. D., &c., &c., the widely known naturalist and palæontologist, professor of comparative anatomy at the University of Pennsylvania, died at his home, 2102 Pine street, Philadelphia, on the 12th of April, 1897. For the last two weeks of his life Prof. Cope was confined to his bed, gradually, but surely succumbing to that fell malady, Bright's disease, of which he had been a victim for some years.

He was born in Philadelphia, July 28th, 1840, was educated at Westtown Academy and at the University of Pennsylvania. In 1869, in America, and in 1863 and in 1864 in Europe, he made a special study of comparative anatomy. In 1864 he became professor of natural science in Haverford College, resigning three years later, owing to failing health. From this on he was associated with the scientific work in connection with the geographical and geological surveys and researches of the territories, &c. He described nearly 1000 new species of *extinct*, and he is reputed to have described as many *recent* vertebrata. For many years Prof. Cope was curator and secretary of the Academy of Science, Philadelphia, and occupied several scientific and responsible positions for the State. In 1879 he received the Bigsby medal, in 1884 he was elected vice-president of the A.A.S. In 1889 he became professor of geology and palæontology in the School of Biology in the university, succeeding Prof. Howells, a position which he held up to the time of his death.

Prof. Cope has contributed about 100 papers to the Amer. Phil. Society, to the Academy of Sciences, to the National Museum,

and the publication, the *American Naturalist*, was essentially Prof. Cope's magazine. Aside from this he has written upwards of 350 papers which form a systematic record of the development of palæontology of the United States. Among his larger works are: (1) "Systematic Arrangement of the Lacertilia and Ophidia;" (2) "History of the Cetacea of the East North American Coast;" (3) "Synopsis of the Extinct Cetacea of the United States;" (4) "Systematic Arrangement of the Extinct Batrachia, Reptilia, and Aves of North America;" (5) "Systematic Relations of the Fishes;" (6) "Systematic Arrangement Relations of the tailed Batrachia;" (7) "Extinct Vertebrata of the Eocene Formation of Wyoming;" (8) "Cretaceous Vertebrata of the West;" (9) "Tertiary Vertebrata."

To the theory of evolution Prof. Cope has made important contributions, amongst which are: (a) "On the Origin of Genera;" (b) "Hypothesis of Evolution, Physical and Metaphysical;" (c) "Evolution and its Consequences;" (d) "Method of Creation of Organic Types;" (e) "Origin of Man and other Vertebrata;" (f) "The Origin of the Fittest," &c., &c

H. M. AMI

Ottawa, May, 1897.

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#### NOTES FOR THE MONTH OF MAY.

*Flying Ants*—On the morning of 12th June myriads of flying ants suddenly made their appearance in various parts of the city, none having been seen previous to that date. They matted in large patches on fence posts, on the edge of the sidewalks, and on bare spots where any flat dry substance was to be found. The fence posts along Cartier Square were covered, and whether from the chill of the previous night or from other causes they appeared numbed and indisposed to fly. Any protuberance seemed to attract them. I did not notice any birds disposed to

feed on them. Will some of our local entomologists give their ideas respecting this sudden incursion of these insects?

*Earthquake*—A heavy earthquake shock occurred on the night of 20th May at 10.15 p.m., followed by a lighter shock about 11.

*Aurora*—There has been a marked absence of aurora for many weeks, an unusual occurrence. Dr. Veeder, of Lyons, N.Y., the authority on auroras, gives the monthly recurrence of the aurora 26 or 27 days apart, and says when no auroras are visible there is a manifest increase in thunder or other storms, as though they had taken the auroras place, and disturbances of the earth currents, known as magnetic storms, occur, even the solid crust of the earth receiving impulses that cause tremors, and earthquakes when the conditions are favourable, because of instability existing therein.

H. B. SMALL.

*July Excursion*—At the last meeting of the Council it was decided to have an excursion this month (July). Final arrangements as to date and place have not as yet been made, but the Committee expects to be in a position to make an announcement within a few days.

*Editorial Note*—In the unavoidable absence from the city of Dr. Ami, the editorial work of the current issue has been assumed by Mr. F. T. Shutt.

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