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February, 1891.

THE
* OTTAWA NATURALIST *

VOLUME IV. No. 11.

The
TRANSACTIONS.

Of the
* Ottawa Field-Naturalists' Club *

(Organized March, 1879. Incorporated March, 1884.)

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MONDAY AFTERNOON LECTURE.—No. 1.

THE STUDY OF NATURAL HISTORY.

By Miss Margaret A. Mills.

(Read Jan. 12, 1891.)

The term Natural History, should be used to include the study of all natural objects whether they are possessed of life, or, give no evidence of vitality. The phenomena of the inorganic world are the special concern of the geologist and mineralogist. The phenomena of the nature and relations of all bodies which exhibit life, are known as the science of biology, which is subdivided into two main classes—botany which deals with plants, and zoology which treats of animals. This general application of the term is often narrowed so that Natural History includes zoology alone. The science of Botany includes everything relating to the vegetable kingdom whether in a living or fossil state. It takes a comprehensive view of all plants, from the minutest microscopic growth to the vast productions of the tropics. From earliest times this study has been much more rationally treated than zoology. It has always been understood as embracing not only the study of the external form of plants, their systematic classification and their geographical distribution, but also that of their minute structure and the processes of nutrition and reproduction. The botanist has studied from his garden of living specimens, and from his hot-house, in which could be reared under the proper conditions necessary for their development, plants from the seeds obtained from foreign lands.

On the contrary, the zoologist had no such aid, and for centuries had to limit his researches and observations to the skeletons and dried skins of birds and animals, or the collections of the traveller or sportsman. It was only in the past century that a knowledge of the preservation of the entire specimen in alcohol was learned. Thence its development and progress has been delayed, not from any lack of interest in the subject, but from a dearth of the facilities and aids which had so assisted the sister science—botany.

A history of zoology and botany must take account of the growth of the various kinds of information acquired in past ages through the

labors of a long series of enthusiastic and ardent lovers of nature who, in succeeding periods, carefully noted and accurately arranged and tested their observations, until we inherit as their descendants, the rich legacy of the accumulated lore of ages.

The infancy of Natural History was the recognition of surrounding objects, and the eager, childish desire to understand their relationships to God and man. Stories of animals from deep seas or foreign lands were treasured with wonder and delight, and this age of universal credulity known as the "legendary," was succeeded by that of the collectors and travellers who were able to refute or confirm, by their own observations, so much that was doubtful.

The great instinctive desire of the heathen and savage to worship the natural in his surroundings, who saw his deity in the sun or in the mighty rushing waters, or seemed to feel the supernatural in some living creature, must have been an evidence of God working in him for his development.

A knowledge of botany has existed from the earliest times, for the plants that so beautify the globe must have ever attracted mankind's notice. The wise Solomon "spake of trees," and the Egyptians and Greeks are known to have been the early cultivators of plants for their medicinal virtues. Aristotle, the great mind of Greece and the leader in all intellectual culture of his time, was especially a Naturalist, and his work on Natural History is not only a record of his own investigations but of all preceding knowledge in this department. He refers his readers to illustrations in anatomical text-books which seem to have been in familiar and general use 2,000 years ago. Pliny, of the Romans, added scarcely a fact to Aristotle's store.

A history of plants was written by Theophrastus, 300 years before Christ, but Dr. Brunfels, of Berne, restored the science to Europe in the 16th century in his "History of Plants."

The 16th century, which saw the occupation of the New World and a general impetus given to learning, is rightly regarded as the starting point of the modern knowledge of natural causes and of the natural sciences. The three following centuries have made great progress in developing the truths of Natural History.

The 16th century awakening of Western Europe led to active

research by means of observations and experiments, the home of which, naturally, was the universities, so at this early date the Italian universities conducted comparative anatomical inquiry into the animals next to man in the scale.

In the 17th century these experimenters began to band themselves into societies for mutual support and intercourse, and academies were founded whose philosophical spirit soon spread from such centres to the nation. At Naples, in 1650, was founded the first of such academies, which still survives and retains its name, "Academia Naturæ Curiosorum."

In 1662, "The Royal Society," of London, England, was incorporated by royal charter. A little later Louis XIV. founded "The Academy of Sciences of Paris."

The dogma of the isolated student of science was restrained, and dogmatic views were rapidly dispelled by argument and the agreement to admit as *truth* only that which was the result of observation or mathematical calculation.

The influence of these great academies in bringing together the collectors, the museum men, and the systematic anatomists, was soon felt in the field of progress of Zoology, and placed it now, for the first time, on a plane nearer the rational one from which botany had been viewed.

By an examination of the early records of the Royal Society it is noticed that marvellous relations were not permitted at its meetings, but solely demonstrable experiments or the exhibition of the actual specimen. Under the light and influence of such strict inquiry, witchcraft, alchemy, and other mediæval relics of superstition disappeared and vanished from public belief like snow before a July sun. But a host of new wonders had accumulated which were substituted, being truth demonstrable by accurate observation.

The progress of the 18th century perhaps culminated in the great Swedish Naturalist, Linnaeus, while such men as John Hunter and Ray undertook the task of examining the anatomical structure of the whole animal kingdom and classifying its members by the results of such profound study.

The invention and perfecting of the microscope in the 19th century

were to the naturalist what the mariner's compass was to the navigator. It came to the aid of the comparative anatomist, when his need was the sorest and as a most potent factor in the development of the science of histology. By the use of this instrument cell-structure and the great cell theory, as propounded and advanced by Schwann and Darwin, became comprehensible.

Buffon's Natural History claims the merit of having been the first work to collect the isolated and apparently disconnected facts of this study and present them in a popular and generally intelligible form.

An important revolution in Natural History took place from the institution of Botanic gardens, from the results of the extension of geographical knowledge, from the various scientific expeditions which were sent over the globe under such scientific spirits as Humboldt, Hooker and Darwin. A botanic garden of the Royal Dublin Society at Glasnevin was opened in 1796. Glasgow had one in 1818, and the Park and Garden at Kew were instituted in 1730. At the end of the 18th century, 1,600 botanic gardens were to be found in Europe. The most important researches in physiological botany had been made by French and German scientists, as their schools afforded facilities not found to the same extent in Great Britain.

The great Linnaeus taught zoology and botany as branches of knowledge to be studied for their own intrinsic interest. He is known to have been a judicious reformer rather than a discoverer. His influence imbued his students with ardor and enthusiasm, and they went forth to all parts of the world to try to contribute to the richness of their loved master's lore and to extend his knowledge.

Linnaeus was the first to attempt the classification of animals according to certain structural characters, and although this proved very defective, it led to much criticism, and stimulated naturalists to comprehend the important principle that internal structure, not external appearance, must determine the limits of groups or classes. The great principle of classification as now generally accepted, was first originated by the genius of the great Frenchman, Baron Cuvier (1769-1832), who made a notable advance on his predecessors, and the world owes to him the first systematic application of comparative anatomy to the study of

the bones of fossil animals. Eminent as an administrator, it is as a naturalist that his memory is and will be preserved.

Linnaeus also devised a simple system of naming the objects of Natural History, by the use of a common scientific language. Each name was to consist of two parts, one to name the whole genus, the other to distinguish the species. Both he and Cuvier showed great skill in the selection of simple, significant names.

The astronomical theories of Kant and La Place, of the development of the solar system from a gaseous condition to its present form, re-acted at once on men's ideas, evolving the notion of spontaneous development in all nature, which idea, although held by the Greeks, was now to be considered under the light and knowledge of the facts gained during the past three centuries. Such men as Cuvier and Agassiz caused to spring up the science of Geology. Lyell explained the history of the earth's crust by the slow development of still existing forces.

To Darwin must be accredited the work of having abolished mysticism from the science of life, and of raising Zoology to be a science which seeks to explain all its phenomena by the application of the laws of physics and chemistry. From his life-work, one gleans that his theory of organic evolution has been based on actual mechanical force and demonstrable fact. He used the knowledge of the unscientific (the farmer and the fancier), who for centuries for practical purposes had used many biological laws. This he formulated as the laws of variation and heredity, and originated thremmatology. He also clearly propounded the theory of the survival of the fittest by showing that numbers are limited by the food supply, and in the struggle for this, a necessary selection is enforced. He also deduced the following :— That every organ, part, color and peculiarity of any organism, must either be of benefit to its possessor or have been useful to its ancestors. And finally he brought the simplest living matter known as protoplasm before the mental vision as the starting point from which all highest forms have been evolved. This principle is generally known to most people only in its sarcastic application to man's descent from the ape.

After paying the tribute of honor by naming Von Baer, Milne-Edwards, Leuckart, Hæckel, Wallace, Von Haller, Audubon, Dawson, Wilson, Huxley, Tyndall and Muller, all bright stars in the

firmament of Natural History, we must leave this historic review to present some other aspects of our subject. Before dismissing them let us remember their toils along a tedious road, along which they had glimmerings of light and hope from that glorious prospect and clearer mental atmosphere which their efforts opened up for our gratification, our intellectual enjoyment and general welfare. Let us be grateful and worthy our inheritance.

Now, scientific truth is not the property of the few, for it is a part of the woof of common life, and all await the solution of the problem and mystery of existence. Since all science is tending this way it must be generally diffused, and this can be done in no better way than by making it a part of the intellectual culture afforded by our common educational systems.

There will be, as there always have been, those with particular aptitudes for the study of Nature, who will pursue it with the noble interest that its truths inspire rather than for the sake of its usefulness to humanity, but their labors are woven into the practical resources of our life. Other abilities, other qualities are required by those who use the truths and principles evolved by the scientist in their practical adaptations to man's material wants and daily uses. One is the researcher, who communes with Nature to allure from her secrets and laws which the mechanical genius readily seizes upon and incorporates in his inventions. The world is most appreciative of the latter, and showers upon him her praises and emoluments, while man in his short-sighted selfishness is too prone to forget and neglect the scientist, who is thus kept behind the scenes of the world's stage. However, such minds are recompensed by the pleasures they find in the discoveries of Nature's truths and in the assured feeling that they are bettering the condition of the masses. Those who pursue science for its own sake rather than from a utilitarian point of view should be fostered and encouraged by the Government of the land and by society's most influential classes. It is from the prevailing tendency of our age to be material and practical that more assistance is not given to naturalists, and the study made more a part of the curriculum of our Public School systems. To be sure, the students of our universities have opportunities to develop scientific tastes, but they form a very small fraction.

of the community. We must reach the children, the young children whose minds are receptive and plastic, and whose habits are being formed. This important work can be commenced in every home, and in every school, if parents and teachers feel their responsibilities in directing aright the latent energies of those entrusted to their care.

Children are busy observers of natural objects and have many questions to ask. This is but indicative of a healthy natural state in them. Are not their inquiries often repressed instead of being encouraged and guided? Why? one asks. And must it not be answered that those in charge of the education of children, as well as parents, do not possess the information necessary to answer simply and intelligently the questions prompted by an awakening intellect. At school and at the fireside how irrationally children have been treated. They have been shut in from nature and compelled to read, write and learn much in abstractions; while Nature, the skillful teacher, awaited them abroad in her domains to give lessons in the pleasantest, easiest form, through the senses. But "a good time is coming, boys;" it has dawned upon us, and our little human buds open in and bloom in the "Kindergarten"—the child garden, where they hear and imitate the songs and movements of birds; where God and love make all things bright and happy; where the flowers, the ants, the bees, the winds, the rain, "Jack Frost" and the stars are the playmates of the children of men. But alas! too soon there comes "a biting, chilling frost" and nips or delays such an all-round development as is desired for our blossoms. It will be only when this natural, rational culture is continued through our entire school course that a right and rational method will be followed, and be productive of good results.

The moral, mental and physical are harmoniously developed under skillful guidance, for in our rambles abroad, eyes, ears and brain are busy in noting and wondering at God's greatness, His love, and His myriad wonders of Creation. The activities of youth must be directed aright, or soon a lazy, listless humor will take possession of many, and if indulged in will be productive of idle day dreams; or, worse still, the same activities and latent energies may lead into wrong and dangerous channels, where shipwreck and disaster may ruin the staunch craft

which gave such bright promises when launched upon life's journey under favouring breezes.

What responsibilities devolve upon us! Do we know them, realize them, feel them—and feeling, act; “Act in the living present”?

If mankind would awake to an examination of self; if we could throw off that sauntering humor, which as a habit lets a great part of each day, of each life, run carelessly away without either business or recreation, we might acquire much skill in many things and ways, quite apart from our proper business or vocation.

Without much knowledge of Natural Science, and without any of its technicalities, much can be done by any one, by encouraging observations and affording or presenting opportunities for the observance of many facts and phenomena, that can be easily and simply explained. The wonders of Nature are ever with us—in all seasons—in all lands, and not only delight and gratify the senses, but lead us up “through nature to Nature's God in worshipful humility, to feel the boundless power and wisdom of our Creator.” The rich coats of animals, their graceful forms and movements; the beautiful variegated plumage of birds, and their sweet songs, all delight the senses; but the elevation of the intellect must follow when their wonderful construction, their uses and the part each plays in Nature's great drama, are observed and comprehended. It can never be too strongly impressed upon minds anxious for the acquisition of knowledge that the commonest surrounding objects are worthy of minute and careful attention. That man has been studying them from earliest times, and recording his interpretations of the Creator's plans, only serve to show how little has been done by comparison with what has yet to be accomplished.

Sleep, the pulsations of our heart, and such puzzling mysteries of our existence are not yet satisfactorily solved, and these problems of paramount importance to nobly endowed man, the crowning work of God on earth (standing at the top of the animal creation), have engrossed man's attention for centuries, and will continue to do so. Then think of thousands of creatures of which little is known, but that they exist, and see what a field of work is before those who may devote themselves exclusively to the fascinating employment of determining their

relations to their surroundings and the part they play in the economy of Nature.

Be convinced, then, there is work for all. No field is yet exhausted ; no man, however great, can say I know all ; no lifetime, however well spent, is long enough to solve the questions of a single subject. Many must contribute each his little store, that the genius may glean and sift new truths from the cumulation which he skilfully lays upon the foundation at that point where his predecessors left the uncompleted work when their summons came to go hence to "join the great majority."

All can help—man, woman and child—whether as the individual or as a society. For those who employ only their leisure hours, the hours of relaxation from the worries or toils of business and busy life, there is this thought, that they are aiding in the great work, and though the contribution be but a single new or rare specimen, the record of an accurate observation, the relation of some true anecdote, or a new psychological inference, he may be furnishing a missing link in some complex chain, some thought that may be crystallized into, and vitalized anew along with the life-long labors of some genius, or he may be furnishing the keystone to some uncompleted structure. Pursued at home, or when visiting foreign countries, who can tell the result ? Some strange bright bird may serve to fill an unoccupied space in the web of Nature ; a fossil bone may reveal the existence of previous unknown monsters ; a broken branch may disclose invaluable material for future mansions or navies ; a mineral fragment may reveal a rich mine, or a geological observation may point out a new locality for coal, that indispensable aid to commerce and industry.

Business must be attended to, and some one has aptly said : "The intervals of business must be attended to." Though a man's leisure is his own, yet for his sake, as well as that of the community, it ought to be one of occupation. His pleasures and recreations ought to bear a contrasting character to his business or profession, in order to cultivate those powers of the mind that are dwarfed or unemployed during work. With Natural History as a recreation of leisure hours, ennui disappears, and every step becomes enchanted ground, and a walk with an aim in view is not exercise for the body alone, but patience, minuteness

and accuracy of observation, cautiousness in drawing conclusions, and in generalization, qualities most desirable in business life, are exercised, and become valuable mental discipline. Then, too, there is that forgetfulness of self, our natural selfishness is forgotten or laid aside when our thoughts are carried upward, and we become wiser and better.

The study of Nature tends to make us more social, in bringing together the different ranks and uniting them by a bond of common interest. Nature makes brotherhoods, and when banded to fish, to hunt, or in some common pursuit, men become fellows; caste and society's distinctions are ignored—man becomes the genus man; snobbery has no encouragement from Nature.

The right impressions of Nature and a cultivation of a taste for some branch of Natural History, may be made a recreation of childhood before life's more serious duties engross the energies and turn the mental, as well as the physical eye from our natural surroundings. Entomology, or the study of insects, proves particularly fascinating to the opening curiosity of children. Too often, children are taught to treat all insects as dangerous or horrible, and meriting avoidance or destruction. The sensible mother can, by her own demeanor and influence, avoid giving any such prejudice against harmless insects and easily explain why the hurtful kinds must be avoided. What ideas of beauty, of form, of coloring, of skill, of speed, of industry, and of character, can be developed from our common insects. The common fly which walks on the smooth ceiling by means of tiny suckers upon its feet; the household spider with its silken snares; the earthworm of our pavements and gardens, which turns over the soil and enriches it for man's use; the ants, many of which oppose barriers to the progress of civilization in some parts of the tropical regions, and the termites which have destroyed the written history of some provinces of South America; again the lovely butterfly that so gracefully flits about our gardens and fields—all furnish topics delightfully novel and attractive for our little ones, when wearied limbs bring them to our knee for mental refreshment. Make such a true story from Nature's fairyland of wonders, and the kindling, interested eyes, which regard you with so much pleasure, will soon make the discoveries necessary to verify your lessons,

and before many years pass, their owner may repay and delight you by an extended knowledge and original work.

Books, papers and periodicals are now aiding the good work, and works on entomology, botany, ornithology, etc., are to be obtained, wherein is given in a pleasing, popular form talks on such topics without the difficult technical terms which alarm so many at the outset of these studies. Names must be learned in due time, being absolutely necessary if we are to discuss or impart our knowledge. Like money, names are but a medium of exchange. When there is the demand, the supply is soon found, and such books are on the increase. Parents will aid by placing these in the hands of the children and instructors of youth. The boys and girls can help by noticing the habits of birds, the flowering of plants, the homes and nests of insects, and in remembering to be kindly with all God's creatures, who have feelings and suffer in some degree like us, though unable to speak to us in our language, to tell the wrongs they suffer, yet their plaintive calls or agonized cries should find commiseration in our hearts. The one who inflicts torture on his inferior is a tyrant and a coward; but to the one who prevents and alleviates suffering, the noble title of hero belongs.

Boys and girls with quick eyes and active feet can gather specimens where their elders, less nimble, fearless and active, would fail.

The young ladies, too, can help the ornithologist, who rightly grieves over the destruction of thousands of birds whose happy existence is sacrificed at the altar of fashion for the sake of their plumage, which is worn upon ladies' hats and bonnets. Would they deem it an adornment if they thought of the slaughter of the gay, pretty creatures, which people the groves and forests and make them ring with their happy songs and bright existence? No! we answer. Ladies are kind but thoughtless on this point, and perhaps reason that it is no harm to wear the bird or a part of its plumage when it is dead, not thinking that they are fostering the trade in bird life and pandering to a cruel whim of dame Fashion. Quite a different thing is the taking of the lives of a few of these for scientific studies, and it is quite proper that the Government of the country should assist Natural History, by equipping and opening to the public, museums, suitable as receptacles for the collections which have been brought together and which are yearly increasing.

Such museums are direct public educators. Strict laws might be framed, and are in most countries, to prevent cruelty and control the avarice of man from carrying on the wholesale slaughter of birds and animals, where there is fear of the extermination of some species, or the destruction of our entire forests. They can assist, equip and encourage our devoted naturalists, whose sole aim is the amelioration of the world.

From a diversity of tastes and mental faculties, all subjects of Natural History receive due attention; each department has its own particular value, and any advance in one does not react to the detriment of any other.

We find some taking great pleasure in the study of Conchology, and claiming that shells and their animal inhabitants, when compared with the other orders of creation, are inferior to none, showing in external appearance as beautiful forms or contour, as exquisite and varied tints and shades of color, and as harmoniously developed a structure and fitness for its surroundings in the animal inhabitant as are to be found in the more complicated higher classes of animals.

And Botany has always had particular charms, and our plants and flowers that so beautify and adorn the brown earth, lend their fragrant odors to delight our sense of smell, and themselves to adorn not only the body but to cultivate the æsthetic in our nature, as well as the most desirable qualities of mind. They always have ministered to our sufferings, in furnishing medicines and remedies to the healer's art. Many there are who find plants too passive to suit their mental trend, and find, in the study of ornithology that life, that sympathy which satisfies their nature, and in our country they have much new work before them, and may find inspiration from a perusal of the life of Audubon, who pursued his extensive studies under such difficulties and discouragements, yet who raised the greatest monument that Art ever gave to Nature, in his great work, "The Birds of America."

The Field-Naturalists' Club has for its composition not only scientists and naturalists, in the fullest meaning of these terms, but many who devote their leisure alone to such pleasing studies, and who imbibe much love and inspiration for the work, as well as much valuable information from the efforts of those so capable of leading and directing others on the borders of such an extensive study.

These enthusiastic leaders, whose unselfish interest in their work and untiring zeal in trying to cause others to enter upon this field of work, should be rewarded by noble *results* and a deep *feeling of gratitude* from those who have enjoyed the opportunities of listening to their lucid discourses in our winter gatherings, or to the familiar talks upon the finds of the day, when we gathered on some shady slope or grassy knoll, after a day's ramble amongst the birds and insects in our flowery fields. We are given so much knowledge—knowledge that has been attested, proved and reduced to a concise, definite form, and which we could not have gained by our own isolated efforts without the labor of reading more than one book on the subjects of botany, entomology, geology and ornithology.

In closing this feeble effort to show that the study of Natural History offers to all opportunities for its promotion as a *science*, some of the more direct advantages of its bearing on man's corporeal wants, as well as upon his mental and moral state, have been briefly noticed as being an important part with which most of us can effectively deal, and a part in which the human tendencies for a love of the marvellous, merely superficial and somewhat credulous may be influenced and directed to a healthy mental development and invigoration, by a selection of the proper mental food.

For a better treatment of the subject, I must refer you to the inaugural address by our worthy President, Dr. Ells, which you have in a printed form in the January number of the "Ottawa Naturalist," which records the transactions of "The Ottawa Field Naturalists' Club."

I've done my little for the club in this paper from a deep sense of gratitude for the great pleasure and profit I've derived from the meetings of this society and from social intercourse with its members.

REPORT OF THE ZOOLOGICAL BRANCH, 1890.

(Read Jan. 15, 1891.)

To the President and Council of the Ottawa Field-Naturalists' Club:—

In making a report of the work of the Club for the past year in that branch of natural history which relates principally to the mammalia found to exist in the neighborhood of Ottawa, we cannot say that any discoveries of particular importance have been made. Many of the larger animals which were at one time quite common have completely disappeared with the cutting down of the forests and the occupation of the land by man, whilst several others are seen only at rare intervals, and these are likely also to disappear at no very distant date. Of the smaller animals, many are yet to be found, and, if new varieties are discovered at all, it will most likely be among the moles, the shrews and the little rodents.

The following is a summary of captures, etc., which have been reported:—

Mr. Evarts, of this city, caught in his house in an ordinary mouse-trap a White-footed Mouse (*Hesperomys leucopus*) in November last, and sent it to Mr. W. A. D. Lees, who in turn sent it to Mr. Whiteaves, of the Geological Survey, who had the specimen mounted. It is now to be seen in the Museum. Several mice of the same sort have been seen during the year in and about dwellings. The mouse itself is common; but we are not aware of its having been previously reported as having taken up its abode in such places.

Mr. F. A. Saunders reports having caught in a trap in Dow's swamp, in November last, three specimens of the Red-backed Mouse (*Evotomys rutilus*), the traps being placed under a fallen tree and baited with apple.

He also reports having seen a Red Fox in June and another one in October, besides Rabbits, Chipmunks, Red Squirrels, Musk Rats, Field and White-footed Mice, and one Flying Squirrel in July last. He further reports that he and his brother, Mr. W. E. Saunders, shot several Bats in the early part of July, among which were the Hoary Bat, the Brown and Silver-haired, and some others which they had not

at the time identified. It may be said that the Hoary Bat is not very common, the other two named are abundant.

Miss Harmer reports that in October last a Black Squirrel was caught near Britannia. This Squirrel was never very numerous in this locality its habitat being more to the south and west. No report has reached us of any having been seen for several years in this neighborhood.

At the Club's excursion to Butternut Grove in early summer a Common Garter Snake was seen in the act of swallowing a goodish sized frog—the frog was at least three times the size of the snake's head. It looked like a big undertaking to persuade a frog of that size to go down head foremost into such a small hole. The reptile was left with its work half accomplished. It seemed rather cruel to leave the frog in such a horrible plight; but we justified ourselves in doing so with the thought, that if we liberated the prisoner his snakeship would only catch another one if he was not prevented from doing so. We did not want to kill the snake and were not inclined to stay and watch him and keep him from exercising the might which constitutes right in the domain of snakes and frogs, and which perhaps is sometimes claimed by animals of a sort which are supposed to occupy a higher place in the natural world.

While no important discoveries have been made during the year, an active interest has been taken by many of the members in finding out more about the habits and peculiarities of the animals common to this and other localities. There are reasons for believing that the club is doing much good in the community by the encouragement and opportunities it affords to its members, and the people generally, for becoming better acquainted with the work in which they occupy themselves, and its never ending sources of interest and enjoyment.

Respectfully submitted,

J. BALLANTYNE, } *Leaders.*
W. P. LETT.

SUB-EXCURSIONS TO THE GEOLOGICAL SURVEY.

No. 4.—December 13th, 1890, under the direction of Dr. George M. Dawson. A large party of ladies and gentlemen availed themselves of the opportunity of examining the collection of Indian curiosities, under the able guidance of Dr. Dawson. As a high authority on this subject, Dr. Dawson has a world-wide reputation, and in his case, the prophet is not without honour in his own country. The afternoon in the Museum was most enjoyable, and all appreciated the courtesy and patience with which all questions were answered, and the uses of the different curious objects explained.

Nos. 5 and 6.—January 10th and 24th, 1891, under the direction of H. M. Ami. The subject treated of at both of these lectures was Palæontology. At the first of these meetings, Mr. Ami gave a brief description of the fossils in the Museum from the Laurentian to the Carboniferous systems; and at the second meeting, completed the description from the Carboniferous to the Post-Tertiary. The meeting on the 24th was very largely attended, and great interest was manifested in the subject. Mr. Ami treated his subject in an able and pleasing manner and the interest was well sustained.

THURSDAY EVENING LECTURES.

On January 15th Dr. Ellis delivered a most elaborate and careful paper on Asbestos. This will be published in full in a future number of THE OTTAWA NATURALIST. A very extensive and valuable collection of specimens from Canadian and foreign mines was exhibited, as well as a great variety of manufactured articles illustrative of the uses to which this valuable mineral is applied.

MONDAY AFTERNOON LECTURES.

On January 12th, the first of this series of popular lectures was inaugurated by the excellent paper by Miss Margaret A. Mills, which is printed in this number. The report of the Zoological Branch was also read. The audiences at all the lectures have been most encouraging and the council is fully satisfied that its decision to hold the lectures in the Normal School has been justified by the great increase in the attendance.

The following meetings will be held during February:-

Mondays—2nd, 9th, 16th and 23rd, at 4.15 p.m., Normal School.

Thursdays—12th and 26th, 8.00 “ “

Saturdays—14th and 28th, at 2.00 p.m., Geological Museum.

Members who have not paid their subscriptions for the current year will kindly forward them to the Treasurer, without waiting to receive personal notices from him.



SUMMARY

— OF —

Canadian Mining Regulations.

NOTICE.

THE following is a summary of the Regulations with respect to the manner of recording claims for *Mineral Lands*, other than Coal Lands, and the conditions governing the purchase of the same.

Any person may explore vacant Dominion Lands not appropriated or reserved by Government for other purposes, and may search therein, either by surface or subterranean prospecting, for mineral deposits, with a view to obtaining a mining location for the same, but no mining location shall be granted until actual discovery has been made of the vein, lode or deposit of mineral or metal within the limits of the location of claim.

A location for mining, except for *Iron* or *Petroleum*, shall not be more than 1500 feet in length, nor more than 600 feet in breadth. A location for mining *Iron* or *Petroleum* shall not exceed 160 acres in area.

On discovering a mineral deposit any person may obtain a mining location, upon marking out his location on the ground, in accordance with the regulations in that behalf, and filing with the Agent of Dominion Lands for the district, within sixty days from discovery, an affidavit in form prescribed by Mining Regulations, and paying at the same time an office fee of five dollars, which will entitle the person so recording his claim to enter into possession of the location applied for.

At any time before the expiration of five years from the date of recording his claim, the claimant may, upon filing proof with the Local Agent that he has expended \$500.00 in actual mining operations on the claim, by paying to the Local Agent therefor \$5 per acre cash and a further sum of \$50 to cover the cost of survey, obtain a patent for said claim as provided in the said Mining Regulations.

Copies of the Regulations may be obtained upon application to the Department of the Interior.

A. M. BURGESS,

Deputy of the Minister of the Interior.

DEPARTMENT OF THE INTERIOR,
Ottawa, Canada, December 19th, 1887. }

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