ANNIVERSARY ADDRESS, 1879.

By Wm. Gossip, F. R. M. S., *President.*

Two years have elapsed since I had the honor of addressing the Institute on our anniversary, with reference to its proceedings and prospects. Then, in the absence of the worthy President, being next in office, I thought it right that one of our rules bearing upon this duty should be observed, lest it might be lost sight of altogether. Since that time you have done me the honor to choose me your President, and now it is more than ever a duty imposed upon me not to allow a rule deemed essential to the well-being of the Institute to remain inoperative, although what has to be said may not, on every occasion, be specially interesting, or largely instructive.

Science is ever progressive. True science is never lost. What the mind of man has once conceived and practically realized is almost always retained, and is never entirely forgotten. Indeed, the empire of science is so widely extended, and its influence so general, as to be beyond the possibility of decay or extinction. All nations interest themselves in its advancement, and by generous impulses contribute to its resources. Knowledge has wonderfully increased, and we may well be proud that our own mother land leads the van in the cause, and more than all others, has largely aided and encouraged the almost universal enlightenment.

When the world is prepared for great discoveries they are usually vouchsafed. The art of Printing, which is now so expansive, perpetuates invention; and steamships and railways, electricity and magnetism, annihilate space, and bring to a focus of general utility the scientific conceptions of every clime. Human intellect has so far mastered the arcana of nature as to be able to control, to a certain extent, some of her most subtle agencies, and make them obedient to its own guidance. With apparent facility, an electric current is conducted thousands of miles, through air and water, and causes a message to be deliver-

ed with exactness and truth in intelligible language. The same subtle fluid, by the same agency, bids fair to be an useful auxiliary of the less mighty steam-engine—a mechanical power, and a means of propulsion; and will, perhaps, in a short time, be economized to dispel the darkness of night in our large cities. The telephone enables individuals to converse, each one from his own chamber, over widely intervening spaces; and ere long sound may rival electricity in instantaneous communication. Except in imagination there is no power that thus mocks at distance. If we would find something analogous we must invade the realms of fiction. The authors of the *Arabian Nights Entertainments* do no more, who send princes and princesses through the air on enchanted horses, by the twist of a peg, thousands of miles in a moment—literally with the speed of thought; and our own immortal Shakspeare, perhaps dreaming of an ocean cable, evokes an adventurous sprite, able to "put a girdle round the earth in forty minutes." These were the wildest vagaries of imagination, which have become in the nineteenth century sober realities.

The imaginative standard of the past having thus been reduced to a fixed value, I may be permitted further to illustrate the practical necromancy of modern times.

Daguerre, in 1839, after years of experiment, at length by a wonderful but simple process, transmitted the human portrait from life to plates of silvered copper, made sensitive to solar light by the vapour of iodine. Soon thereafter, the principle thus fully developed, improvements sprang up on every hand, and the results so far are beautiful photographs, made permanent by autotype, which give the most accurate delineations of works of art as well as natural objects. It is not to be supposed that they will stop here, or that science has done with them. Genius will in time be able to fix the colours of the camera, as well as its shadows.

Again, experiments on light, following a growing knowledge of the laws by which it is governed, have produced the spectroscope, and now scientists assume, from careful analysis of the solar atmosphere, that they have a clue to ascertain the substance of the sun.

In connection with this subject, the experiments of Mr. Lockyer, a distinguished savant, and editor of *Nature*, a journal well known in the world of science, with reference to the solar and stellar spectra, are of much interest. He has started an hypothesis, and justified it by experiment—that the elements themselves, or at all events some of them, are compound bodies, and that hydrogen is the principal elementary substance represented

in these spectra. I cannot find in what Mr. Lockyer has written that he goes farther than this, if quite so far. But the *Medical Tribune* of April 15—a journal of scientific pretensions, published in New York—contains a well written article, by Dr. Wilder, its editor, based upon the Papers in the No. of *Nature* I have quoted, in which the argument of Prof. Lockyer is asserted to be, "that in hydrogen we have matter reduced to its lowest terms—*the only one element.*" I do not think myself that Prof. Lockyer has made this a distinctly definite conclusion, but it affords, at all events, to the writer in the *Tribune*, an opportunity to assume for the hypothesis, or theory, of our associate, Mr. Dewar, and his friend Dr. Fraser, a like degree of credence. These gentlemen have long since announced, in their ato-magnetic theory, that all primal atoms are either hydrogen or oxygen, mineral or vegetable, which approaches the hypothesis or theory of Prof. Lockyer, as stated by the *Tribune*, but is of earlier date, and were it substantiated by experiment, would be as little objectionable. The writer in the *Tribune*, favorable to Mr. Lockyer's hypothesis as to the principle involved, objects "that as hydrogen is not a luminous substance, and, therefore, is of itself without motion, and, being molecular, must have been built up from atoms of a still more elementary character, there must be some force acting upon it to set its atoms in motion." Here again comes into play Messrs. Dewar and Fraser's plausible theory of the magnetic polarity of atoms. He quotes the suggestions of other scientists to account for this motion; also, that electricity, by inducing the primal atoms to assume polarity, may cause the first motion by means of the attraction and repulsion of the two poles, the positive and the negative; and gives a reason to show that the element denominated hydrogen, when negatively electric and uncombined, is identical with the substance known as oxygen. Thus the theory is similar to that of Prof. Lockyer, but with a difference. I do not pretend to understand the processes which have prompted these several speculations, generally alike. Neither appears to have advanced much beyond the confines of enquiry, and we may be content to await with patience their further investigation. To those interested in its progress, I would recommend a study of the articles in *Nature* of January, 1879, and to supplement them with that in the *Medical Tribune* of April 15, following. Perhaps in time the spectroscope may help us to a satisfactory solution of the difficulties.

To the spectrum and the microscope we may look for some of the most valuable discoveries ever made in the realms of science.

At the risk of being thought discursive or digressive, I beg leave to refer to an event of great interest, with which we may be all more or less familiar, which makes us better acquainted with microscopic revelations, and brings us so close to the beginning of life, that the power to produce it from lifeless elements appears to be almost within our grasp.

The English papers, by the royal mail steamship which arrived early in September, are occupied with lengthy accounts of the anniversary meeting of the British Association at Sheffield on the 20th August. These anniversaries have lost none of their interest for the British people. We learn from them the importance attached by all classes to scientific investigations. The Press uses its powerful combinations to spread abroad, with the utmost rapidity, over all the Empire, and to foreign countries, full details of the proceedings, employing for that purpose the energies which art and science have placed at its disposal. The railway and locomotive, the marine engine and screw propeller, the ocean cable and electric telegraph, all triumphs of science and genius within a century, engage in the work. Photography also, takes the portraits of the President and other scientists of the Association, and then by electro-metallurgy makes them typography, placing before us in a newspaper correct likenesses of the men who, in Great Britain, contribute to the scientific advancement of the nation. Do we desire to know the subjects which engage the minds of these men? The press communicates them in twenty-four hours after their delivery. They reach us by electric telegraph as quickly on this side of the Atlantic. In twelve days at farthest, by steam navigation. I may call all this the artistic application of Natural Science. The substance of the President's address is before me. It treats of Protoplasm. He describes "Protoplasm, or living matter, as lying at the base of all living phenomena." * * "a tangible and visible reality, which the chemist may analyse in his laboratory, the biologist scrutinize beneath his microscope and dissecting needle. All over the world, in fresh water and in salt, minute particles of protoplasm may be detected. In the famous amœba, which has arrested the attention of naturalists, almost from the commencement of microscopical observation, we have the essential characters of a cell, the morphological unit of organization, the physiological source of unicellular existence. But cells combine into organs, and organs into animals. Yet in the most complex animal the cell retains its individuality. * * * *

This, though not entirely new, is a lucid description of

great interest, and what follows ought to command earnest attention besides:—

"Examine under the microscope a drop of blood freshly taken from the human subject, or from any of the higher animals. It is seen to be composed of a multitude of red corpuscles, swimming in a nearly colourless liquid, and along with these, but in much smaller numbers, somewhat larger colourless corpuscles. The red corpuscles are modified cells, while the colourless corpuscles are cells still retaining their typical form and properties. These last are little masses of protoplasm, each enveloping a central nucleus. Watch them. They will be seen to change their shape. They will project and withdraw pseudopodia, and creep about like an amœba. But more than this, like an amœba, they will take in solid matter as nutriment. They may be fed with coloured food, which will then be seen to have accumulated in the interior of their soft transparent protoplasm; and, in some cases, the colourless blood corpuscles have actually been seen to devour their more diminutive companions the red ones."

All this is very wonderful, and to many whose opportunities of microscopic observation are rare must appear entirely new. They may have been prepared for the modified cell of the red corpuscle, but the protoplasmic—the living condition of the white—feeding as it were, upon itself, has only been revealed by the highest powers of the microscope. We have it on Supreme authority as to the animal, that "the blood is the life thereof," but whoever could have supposed that this Divine truth would be proved to the senses after this manner. I should imagine that the knowledge is of the highest importance. Our M. D.'s are called upon now to adjust the equilibrium between the red and white corpuscles—to lessen or increase the cannibal instincts of the white, and so to cleanse the impurities that interfere with a healthy circulation, and which are the fruitful generators of disease.

The instances quoted illustrate the phenomena of the protoplasmic cell, which is the basis of the physical life in animals. But there are other wonders. It is precisely the same in the vegetable kingdom. The President proceeds to give a number of examples to show that the primary cell in plants is identical with that in animals, and undistinguishable from it. "The spores which swim about in the field of the microscope, driven by vibrating cilia, and avoiding collision with obstacles in their way, behave exactly like the amœba." Dr. Fraser may tell you that this motion and careful avoidance of obstacles is due to

their magnetism and polarity. "But the most curious illustration of the identity of the elementary life in plants and animals, is found in the fact that the former as well as the latter are subject to the influence of anæsthetics. A sensitive plant confined under a bell-glass, with a sponge filled with ether, soon ceases to manifest any sensibility. Withdraw the sponge, and it will speedily recover germination. Fermentation may be arrested by the same means. Seeds of cress kept under the influence of ether for five or six days, remained quite passive. But they were only *sleeping*, and not killed. As soon as the ether was removed, germination set in at once with activity. The same thing is true of fermentation." It was stated as the results of all these investigations, "that in protoplasm we find the only form of matter in which life can manifest itself, and that though the outer conditions of life — heat, air, water, food — may be all present, protoplasm would be still needed, in order that their conditions may be utilized. It would, however, be a mistake to suppose that all protoplasm is identical. Of two particles of protoplasm, between which we may defy all the power of the microscope, all the resources of the laboratory to detect a difference, one can develop only to a jelly-fish, the other only to a man, and one conclusion alone is here possible,—that deep within them there must be a fundamental difference which thus determines their inevitable destiny, but of which we know nothing, and can assert nothing beyond the statement that it must depend upon their hidden molecular constitution."

And here I would venture a crude idea—that if protoplasm as revealed by the microscope, is really the beginning of life, its ultimate development may depend, less upon a hidden molecular constitution in the cell units, in which no differences can be discovered, than upon cell aggregation. Or, . produced according to Dr. Fraser's theory, by the atoms assuming polarity, being vivified by magnetic action. The last would not be spontaneous generation, but something analogous. Really, all we know is, that like in the animal and vegetable proceeds from like. But it is an important admission by Dr. Allman, to which I would join the idea just expressed, "that his assertion does not in the least diminish the vast difference which separates lifeless from living matter, nor lessen the mystery of life itself. No chemist has yet built up one particle of living matter out of lifeless elements." Or, as I understand it, no chemist, or magnetist, or electrician, has yet made a *protoplasm*, or brought together atomic conditions necessary to create unicellular existence, much less to endow

"*an aggregate*" of cells with the direction of a positive animal life—a reason for which I think is satisfactorily given in the Book of Genesis, chap. 3, v. 22 to 24.

The foregoing are *a few short extracts* from the President's address, interspersed here and there with some passing observations; for I have felt, in the relation, that I may not only be too diffusive, but that I am trenching somewhat on the province of our talented associate and microscopist, Dr. Sommers. I have only further to hope that our Institute will soon possess microscopic instruments of sufficient power to enable *him* to show us all those microscopic experiments and microscopic life, the wonders of which have been for some time known to the scientists of other countries. From these anticipated resources we may, I think, reasonably expect, that in this to us new field of investigation, discoveries will be made that will prove our high estimation of this valuable branch of Natural Science, and perhaps enable us, in an hitherto untried zone of research, to contribute a little to what has been already realized.

Yet, after all the wealth of scientific discovery of our day, and our pride in it, which sometimes amounts to inflation, I think it must be conceded by sober reason that human progress, great as it is, has reached no further than the threshold of the temple of science, the golden pinnacles of which seem now and then to greet our vision high above the clouds of obscurity. The motto of its votaries must still be "Excelsior!" Still it is not as in the past ages, that speculative science, assuming the general ignorance, stands for truth, or is received without strict examination. The world has had much to unlearn of what had been for long periods received as indisputable. The earth, without further controversy, rolls round the sun, and is no longer a flat surface girdled by an unknown ocean. Even within a century revealed religion has been placed, I think, upon a surer basis by scientific interpretation. Geology, with yet much to unfold, so far shows us that the world (I say it with reverence) was not made in six natural days, although the sequence of creation corresponds more exactly with a reasonable and no doubt a more correct interpretation of the Divine record; and crude deductions with respect to the effects of the Noachian deluge, are fast giving way before investigations which, without ignoring that great event, or any of its phenomena, reasonably attribute much that was presupposed to belong to it, to other and remoter causes. These truths are intimately connected with and lie at the foundation of many of the grand discoveries of the age. Some of them are dogmas

now, and all will be so with succeeding generations. The difficulty with them is the self-sufficiency and scepticism they engender, and to restrain their assertion within the bounds of propriety. Science and religion ought to dwell in perfect harmony. True science can do no more than accommodate each to each by the operation of the laws of eternal truth. This is being done gradually but surely. If some of the most celebrated searchers into nature of our own day could wake up a century hence, they would without doubt be as much astonished at the stride of knowledge meanwhile, and the consequent disturbance of previous belief, as those would be who have lived a century before our era, could they now start into living consciousness of the past and present.

It may excite a smile that I should imagine so curious an event; but we may still consider it certain, that a comparison of notes would realize to all their minds the practical truth enunciated by one of the wisest among them, as true as when it was uttered, as to all that has been done, to wit: that we are only as children picking up pebbles from the shore, while the great ocean of truth lies unexplored before us.

But it is time that I should come nigher home. In Nova Scotia, within ten days' distance by steam of the mother country, and adjoining the great republic,—where we have unsurpassed facilities for acquiring a knowledge of and utilizing the latest scientific progress and discoveries,—it might be supposed that we would be practically acquainted with and profit by them, and with everything recognized as improvement. The necessity, however, is conceded but slowly, and we have not much to boast of in this respect. Our scientific pursuits are nearly all limited to a college curriculum,—to a course of chemistry, electricity, botany, and cognate sciences. This is doubtless an excellent preparation, but as yet, so far as we know, no further fruits have been produced. It is a college education — nothing more. There may be various reasons for this. Nova Scotia, though early settled, has never been very well known in the world, especially in the world of science. Capital and enterprise have not been largely employed to call her material resources (not to mention those which are inert) into active operation. She has looked to other means of wealth which were more readily procurable, but which, whatever they may have been, are not now steadily profitable. She is, in fact, so far as science is concerned, much behind the age. The urgency is, however, being rapidly forced upon her, that resources but partially used, or not used at all,

must soon be called into action, if we would play our part as an integral portion of British America. There is enough of talent and ability amongst ourselves to take secondary action in their development, although neither speculation nor capital at present appears very eager to make them available. It certainly does seem strange, that we cannot even point to the existence of a cotton-mill, with a chief city which is the Atlantic entrepot of a Dominion stretching from Halifax to the shores of the Pacific, possessing as we do railway communication for a long distance inland, and, as we shall do in a few years, from hence to British Columbia, to say nothing of the limitless coal and iron in Nova Scotia, and a cotton-growing country within twenty days' sail of our chief port. A reason may be found on the part of our own people in the want of capital for so expensive and important an undertaking, and ignorance of its management. But that our unsurpassed geographical position, and the acknowledged decadence of British manufactures, through rivalry of foreigners, should not have turned the attention of the cotton lords of England to Nova Scotia, from whence to supply the growing Dominion, and to carry the war into the enemy's territory, is something not easily understood. I may be pardoned this allusion. It is not so far beyond the domain of natural science, involving as it does many of its branches, that our wishes and hopes may not centre in such an enterprise.

Of our other industries connected with natural science, I will speak briefly. Coal is inexhaustible, and I hope to see the day when cotton and sugar and iron, and other manufactories at home, shall preclude the necessity of looking for a market abroad for this valuable mineral; and when our own Dominion, the western part of it especially, shall be more ready to buy from us than we to sell to them. This is the true solution of the problem of coal mining as a source of national wealth. The time will surely arrive, and we hope is not far distant, whoever may live to witness it. Strange that even now our interests should be diverse, or not to be reconciled, and that we cannot work together as an united people.

Iron is as inexhaustible as coal, and more valuable. One blast furnace is at work for the reduction of its ores, requiring scientific knowledge and practical industry and economy to sustain it, and these will no doubt multiply as markets are realized and demand increases.

The rocks of the Atlantic coast line, from Canso to Yarmouth, and for a considerable breadth inland, are prolific in gold, which,

even now, is worked profitably, and would be much more so if science and capital were largely employed in its development.

Promising indications of Copper are frequent, even within a short distance of the capital, but they have not tempted eager speculation or scientific research. Copper, which requires patient and expensive exploration, is as yet only talked about as a Provincial enterprise. The same may be said of Silver and Lead, which are believed to exist in workable quantities, only awaiting capital and skill, as employed in other countries, to make them largely profitable.

It is high time that we knew the extent of our natural resources. I would like to be able to state that an exhaustive geological survey of the Province had been made, and its mineral riches mapped with some degree of certainty. We should know by this time if they are as valuable as they have been assumed to be, or otherwise. All doubt upon this subject ought long since to have been set at rest. The geological survey of Canada, provided for by the Dominion Government, began at the wrong end.

It will be expected, I presume, that I should, before I conclude, make some reference to the work of the Institute during the past year. I shall do so as shortly as possible. I make no comparisons, and do not claim for it any great originality, or superlative merit. It is but an humble follower in the wake of more richly freighted argosies. I shall merely assert, therefore, that it has furnished a large amount of information on the geology, mineralogy, zoology, botany and meteorology of Nova Scotia, which otherwise would not have been generally known. In that branch of science first mentioned I will take the liberty to allude to the articles of the Rev. Dr. Honeyman, which of late have been directed to a correction of the geology of our own Province. On the evidence of position and palæontology, strata which previously were supposed to be widely extended, are proved not to exist, or to belong to lower formations. I recommend these papers, which will be found in our published Transactions, to the careful attention of all acquainted with the science, who take an interest, for economic purposes or otherwise, in the succession and deposition of the rocks, as a guide to the mineral resources of Nova Scotia. A careful study of them may prevent many mistakes of scientific importance. The department of geology, I regret to say, was badly represented at the Provincial exhibition; but even there was some encouragement, and those who sought might have found very fine specimens of coal from the

Little Glace Bay, Pictou, and other mines; gold specimens from Oldham and Montague, and from the latter, within a distance of eight miles from Halifax, a brick (so called) of gold, a month's work of fourteen men, valued at $7,666.92, taken from the "Rose" lode. Also sulphuret of and native copper, and galena and silver,—with some fine specimens of granite and syenite, freestone and other rocks and minerals, awaiting science, industry and capital for their complete development.

In like manner I desire to draw attention to the papers of my friend, Dr. J. Bernard Gilpin (now absent), on the Zoology of Nova Scotia. Dr. Gilpin has successively drawn upon the mammals of Nova Scotia (Indians included) for description, until he has left none remaining the history of which he has not noted. It is almost the same with the fishes that frequent or are native of our coast and inland waters. In a recent No. of the Transactions he shows us the salmon "from his first appearance as a minnow, and through all his changes, until lastly he gives us a drawing of his degeneration (degradation I should call it) in colour and leanness, and the almost grotesque changes in the jaws of the male during spawning. He is also of opinion, against preconceived belief, (in which he is supported by Mr. Wilmot, of the fish-breeding establishment at Bedford,) that all our salmon are retained during the winter in our lakes and inland waters.

J. Matthew Jones, F. L. S., formerly President of the Institute, to whom we are much indebted for papers on various subjects, has contributed, in an Appendix to the Transactions of 1879, a list of the Fishes of Nova Scotia, corrected to date, in the preparation of which he manifests great research, and acknowledges the generous assistance of his much esteemed friend, Prof. G. Brown Goode, of the Smithsonian Institute, Asst. United States Fish Commissioner. This paper will be much valued for the information given, and for future reference.

Dr. Sommers, Prof. of Microscopy, and the Rev. E. Ball, of Maccan, furnish botanical papers of merit and usefulness—the former on Nova Scotian Mosses, the last named gentleman on Aspidium Spinulosum—*Grey*. Dr. Sommers has also furnished a paper on Microscopy.

Mr. H. Louis, Assoc. Roy. School of Mines, (a recent member of our Institute,) communicates a paper on "The Analysis of a New Mineral from Blomidon." For this contribution to science, with reference to which Prof. Dana, to whom it was submitted, remarks that there is nothing like it in Mineralogy, (meaning

that it is an original discovery,) Dr. Honeyman has suggested the name of "Louisite," by which it will henceforth be known. Also, a valuable paper "On the Ankerite Veins of Londonderry, Nova Scotia," with copious analyses. This gentleman, from whose talent much was expected, on behalf of the Institute, and the country especially, has left our shores to fill a more responsible situation in England.

"The Limonite and Limestones of Pictou County," is the title of a paper bearing upon the economic mineral resources of Nova Scotia, by Edwin Gilpin, A.M., F. G. S. The processes of nature, by which these minerals were formed, are lucidly accounted for and described, and their value shown to be considerable. According to the author they appear to occupy positions similar to the marine limestones at Whitehaven, and Furness, and the Mendip Hills, in England,—and are, by some, considered to have been deposited in a similar manner to the large deposits of Limonite, the lower silurian calciferous formation in Pennsylvania. The limestones of Artzberg and the Thuringian Forest are believed to have been formed in the same way.

Mr. Dewar has a paper on his favorite subject of Ato-magnetism—which I have previously noticed in connection with the spectrum discoveries of Prof. Lockyer, and the article in the *Medical Tribune.*

Mr. Mellish, a secretary of the Institute, placed on record at the close of last session, an interesting description of fish culture in Nova Scotia, stating that a total of 4,800,000 salmon had been distributed from the hatchery of Bedford Basin during the short space of four years.

On other matters concerning the Institute and its working, I shall be very brief. We have friendly correspondence with many sister societies in various parts of the world. The Royal Microscopical Society of London, recently passed a resolution, which recognizes for your President, for the time being, the honour of appending F.R.M.S. (Fellow of the Royal Microscopical Society) to his name, of which honour, however unworthy, your humble servant has been the first recipient. This recognition of the Institute is of some value, and has been suitably acknowledged; and I hope before long we shall be able to show, by practical illustration, that it is not undeserved. We exchange our Transactions with the valuable monthly publications of the R. M. S.

Best of all, perhaps, is the statement I am able to make—that we owe no man anything.

I would fain have closed with this gratifying announcement;

But a sorrowful task still awaits me, viz., to notice that, during the past year, we have had to lament the decease of three of our most zealous and useful members, and very good friends. You will find obituary notices of them in the published Transactions. It is again a painful duty imposed upon me to mention a fourth bereavement in the death of Dr. How, Professor of Chemistry, King's College, Windsor (not latterly a member of our Institute, but a frequent contributor to its Transactions), which took place at Windsor on the 27th September last. Dr. How was an able scientist, and had made some interesting mineralogical discoveries in Nova Scotia. He filled the professorial chair with credit to himself and the University, and with much advantage to the students, by whom he will be long remembered, and his death regretted. His loss must be deeply felt by the Institution at Windsor, which he adorned by his talents and amenities; and it will not be easy to fill a chair, the duties of which require in an eminent degree high qualifications and systematic order.

I have now, amid avocations which leave me little leisure for work like this, endeavored (imperfectly enough, I know) to perform a duty prescribed by the rules of the Institute. I fear I have wearied you with an address which, like many others of the kind, on similar occasions, has not the merit of propounding startling hypotheses or original theories. It may, however, serve to show that we are in earnest, and if it has the slightest effect in stimulating pursuits and studies within our reach, it will fulfil my highest expectations. I would have liked to be able to tell you that our people take as much interest in natural science — comparatively, of course — as the people of England do in the work of the British Association, or that the knowledge of Nova Scotia we have conveyed, which is by no means unimportant, is as highly appreciated among ourselves in this our own home, as it seems to be in other countries. This desire, however, is premature, and many of us may not await the better time coming. Instead, we must, I suppose, rest content with being the pioneers of science in Nova Scotia, and leave it to future generations to enter into and profit by our gratuitous and disinterested labors.