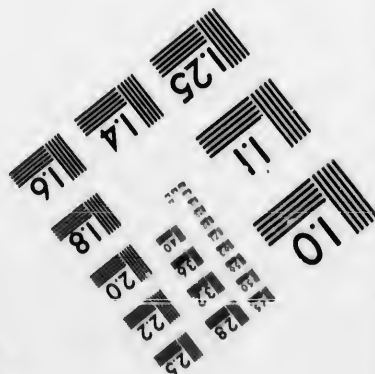
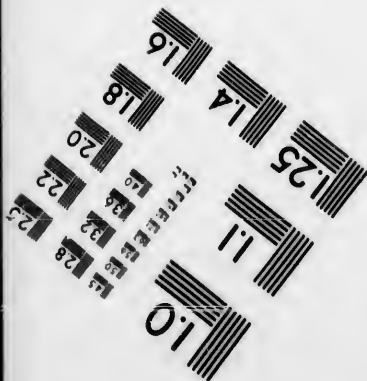
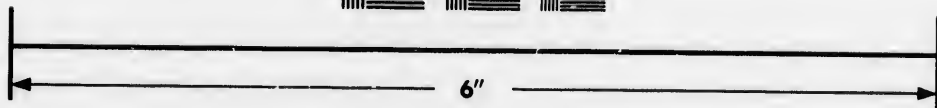
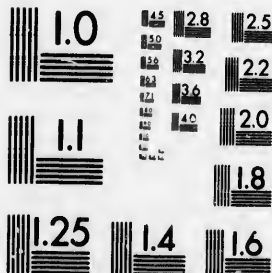


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

18
20
22
25

**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

10

© 1986

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distortion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Includes supplementary material/
Comprend du matériel supplémentaire
- Only edition available/
Seule édition disponible
- Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/
Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

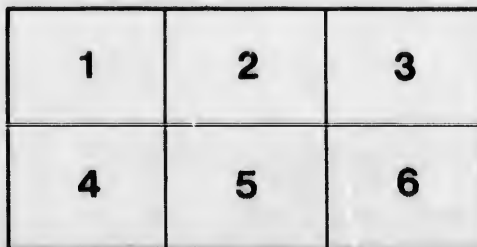
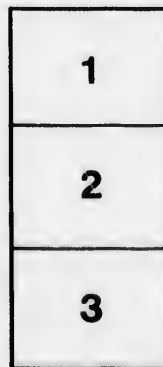
Archives of Ontario Library

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol → (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Archives of Ontario Library

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole → signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

e
étails
s du
modifier
r une
Image

s

errata
to

pelure,
n à

32X

AN ADDRESS

DELIVERED BEFORE THE

COUNTY OF SIMCOE MECHANICS' INSTITUTE, BARRIE,

AT THE CLOSE OF THE SESSION,

MAY 21st, 1858,

BY

JOHN ARDAGH, M.D., M.R.C.S., ENGLAND,
MEMBER OF THE CANADIAN INSTITUTE, &c.

PUBLISHED BY REQUEST OF THE PRESIDENT AND DIRECTORS.

BARRIE, C.W.:

PRINTED AT "THE SPIRIT OF THE AGE" OFFICE, DUNLOP STREET,
By J. H. JONES & T. F. DAVIES.

1858.

LA

Ev
em
Ins
cia
na

I
of
sup
an
ing
th
of
re
te
in
th
w
th
w
be
in
P
P
Y

ADDRESS.

LADIES AND GENTLEMEN,

You will, I feel convinced, agree with me that the Evening which concludes our Session could not be more usefully employed than in a consideration of those subjects which an Institution like ours should suggest at all times, but more especially on the return of that season which puts a periodical termination to our labours.

None of us, I am sure, could so greatly misinterpret the motives of the founders and supporters of Mechanics' Institutes, as to suppose that their means and exertions were intended to rear up and establish among us a mere plaything, which without disturbing our indolence, should feed our vanity—either by affording a theatre for mere profitless display, or by conferring the epithets of *Literary* and *Scientific*, if no efforts were made and no fruits reaped, which deserved either appellation. All experience teaches, that Time, the great innovator, affixes the brand of inutility on most human institutions—not so often by reducing the value of those objects, for the attainment of which they were originally established, as by perverting the institutions themselves. Their efficiency is thus impaired, whilst the respect with which they were originally regarded is diminished, and both in proportion as the supporters or managers become deficient in action, industry and singleness of purpose. I know of no precaution so effectual against such a consummation, as a regular, periodical recurrence to original intentions and determinations. Young, therefore, as our Institute is, it behoves us, at every fitting

opportunity to test our performances by our promises—to decide, by a scrutiny of our past proceedings, how the machinery of our Institution has worked, with a view to the adoption of such improvements as experience may suggest, and to encourage each other to perseverance in our good work, by a consideration of the benefits which such Associations in general, and ours in particular, are calculated to confer.

To do all this, fully and fairly, would, however, involve the discussion of some topics not strictly pertinent to this time and place—nor yet suited to an individual who, speaking only his own sentiments, should not pretend to anticipate decisions which belong to the Institute in its collective capacity. I shall not, therefore, attempt to influence the judgment of others on subjects, to the consideration of which they are perhaps more competent than myself, nor interfere in those details of management, the arrangements of which is the business of the Society, generally, or of the Managing Committee. Without doing either, however, I may be permitted to review so much of our past labours as will show how far they have been generally subservient to the great objects of the Institute, and to suggest one or two improvements, thrown out rather as subjects for future consideration, and as illustrative of the possible amount of benefit which it is capable of conferring, than with the intention of pronouncing what may be advisable, or even feasible, at the present time, and under existing circumstances.

It may readily be supposed that I feel considerable diffidence in at all appearing before you as an advocate and critic, with the consciousness that the Interests of the Institute are in some degree, and for the time at least, confided to my discretion. I am however cheered to my task by the conviction that I address an assembly too deeply and favourably interested to identify the Advocate with his cause, so far as to allow the unskilfulness of the former to compromise the welfare of the latter. Neither can my personal feelings be very enviable at this moment, when I recollect that you were last addressed, on an occasion like the present, by your late President, Mr. WALKER. That gentleman was intimately acquainted with the moral and intellectual wants of those around him, and possessed a corresponding knowledge of the appropriate means of supplying both. Neither should we forget our obligations to Mr. WM. BOYS, the present President, or the Secretary, Mr. RICHARD BERNARD, to the extended intel-

ligence and active and efficient zeal of these two gentlemen we are deeply indebted.

The proceedings during the past year naturally divide themselves with those connected with matters of regulation and finance, at one of which only I shall glance, and those in which a meeting like the present may be supposed to be more immediately interested, viz.: the Literary and Scientific contributions of those gentlemen who have lent their assistance. With respect to the former, it was the opinion of the Committee that the interests of the Institute, and its increased utility, would be better served by admitting the public indiscriminately, extending as widely as possible the privilege of free admission; others judged that any payment, however small, would enhance the estimation and consequent value of the advantages to be derived from an attendance on the Lectures, as well as prove the means of excluding such as might be inclined to come merely for the purpose of lounging away an idle hour, without feeling any due interest in our proceedings. Our audience, however, during the past season, if less numerous, has not been less attentive than heretofore, and our efforts have been cheered by a more evident intelligence of their object and a greater sympathy in their success. This is at least, a partial, realization of one of the great purposes of the Institution, and is an indication gratifying at once to those who have been more actively employed in contributing the results of their research and study to the instruction and amusement of others. Before quitting this part of the subject, I may be allowed, on behalf of the other Lecturers, as well as on my own, to return our best thanks for the kind attention with which we have been heard, and at the same time to express our peculiar acknowledgments to the Lady portion of our audience, whose attendance was not the less numerous, nor their approbation the least encouraging during the past six months.

In drawing your attention to the Literary and Scientific labours of the Session, I shall not attempt to criticise the efforts of any gentleman, nor pretend to award the meed of applause which I might conceive he deserved. As all performances, so to speak, have been public, so the public, to whom they were addressed, and for whom they were intended, have long since formed their own opinion—an opinion which it would be idle and presumptuous in me to attempt to alter. In truth, the exercise of a critical spirit, taken in its rigid and ungentle sense, were there even

room or occasion for its display, would not befit my position at this moment—nor could my mite of approbation add, to the well-merited applause bestowed on the Lecturers by the large and intelligent assemblies collected in this room, during the past winter. Time, will not permit me to give anything like a lengthened view of the subjects lectured on, nor yet allow me to discuss them specially in relation to their individual importance. It will, perhaps, better suit the present occasion, if we rather consider how far a knowledge of them is calculated to elevate and enlarge our views, expand our sympathies, and implant or diffuse a task for mental culture and intellectual recreation. For this purpose, we shall endeavour, even while casting a mere passing glance on each topic, to take in some at least of those characteristic hues and outlines which render it an object of beauty and attraction, apart from its peculiar utility in the practical business of life; though of course no one could undervalue the latter quality, which at another time, and under another view of the subject, would meet the attention it deserves.

The Literary and Scientific campaign, was opened by Lectures on Chemistry—Chemistry, potent over the vast empire of inert matter. You were shown what the universal science could do; how it could analyze and combine; make solids fluids, and fluids solids; resolve things into their elementary gases and recombine them; ascertain the necessary proportions, in which two or more bodies unite, when shall result a product totally differing from each component in character and properties—Chemistry, formerly considered as a mere amusement, at present, justly regarded as one of the most sublime and important of sciences, embracing nearly the whole of natural phenomena, there being comparatively few changes, which are not attended with some effect that comes under the consideration of this science; it offers to our notice an immense variety of topics, and considerations, some of them of primary importance to every inhabitant of the earth. Take for instance the influence of *heat*, *light* and *electricity*, considered as constituents of *climate*; through their agency only is the condition of our planet and of all its inhabitants determined, and it is strictly in reference to them, that the bodily configuration of all living creatures is planned. The consideration of this subject includes all those arguments for contrivance and design so much prized in our days, and shews that the most remote members of creation are connected together by indissoluble ties;

not merely in the aggregate—not merely as to the more important members of the great whole—but that the smallest and apparently humblest and most insignificant stands in strict relation with the mightiest and most influential. Take one instance: Is not the eye of the meanest reptile that enjoys the sense of sight created and fashioned with an obvious adaptation to the light of the sun—that enormous luminary, 800 and 80,000 miles in diameter—around which we revolve at a distance of 95 millions of miles? Yet, the great orb of day was created as much to disperse a cheering beam to the visual organ of this apparently insignificant and unnoticed creature, as “to bend the reluctant planets to fulfil the fated rounds of time.” To these beneficent agents we owe not merely the redemption of our earth from coldness, darkness, and sterility, but also the grateful succession of seasons; the bud and promise of Spring, the bloom and ardour of Summer, and the rich fruition and maturity of Autumn; nor in this country should “*pale concluding Winter*” remain unnoticed—the repose of nature—the period which so fully displays the triumphs of civilization over natural difficulties, in the comforts and necessaries we are compelled to provide against; and, above all, the season peculiarly endeared by fire-side recollections and enjoyments, reaching from laughing childhood to hoary age.

The next Lecture was on *The Rise and Progress of European Power in India*. It has been said, that he who lives ignorant of what has preceded his own times, lives and dies a child; but he is scarcely more advanced in intelligence, who merely knows that certain events have occurred, and certain personages figured on the great theatre of the world, without a corresponding knowledge of contemporaneous and preceding circumstances, whereby, in the tangled web of human affairs, these events and individuals have been impressed with their peculiarities of incident and character. Whoever, therefore, would read history—not as a romance, but as a solemn and instructive warning—will read it with attention to its chronology. He may there see the vices and follies of nations preceding and precipitating their decline, and decypher, though darkly and imperfectly, as much as we are permitted to learn, at this side of the grave, of God’s retributive providence and moral government of the world.

From Alexander the Great to the time when the European powers began to be interested in the affairs of India, when Vasco

de Gama, the Portuguese, after a voyage of thirteen months landed in Hindostan, to the close of the 16th century, when Drake, Cavendish, and other English navigators, by doubling Cape Horn and the Cape of Good Hope, reached India. The success attending these voyages—the establishing of the East India Company in 1690—the successes of Clive, to the present British rule in India. India, doubly interesting to us just now, from the devoted heroism, stirring scenes, tragic events which have occurred during the past twelve months. In the Lecture the more recent events of European India were given as fully as events had occurred.

Brazil, its History, Manners, &c., followed those of India. The variety of climates will naturally occur to us, in connection with this subject—from the fervid glow and rank luxuriance of the Tropics, to the hoar sterility and iron rigour of the Poles, with the intervening variety of soil and productions, and with their various inhabitants, from the “naked Indian” to the “shuddering tenant of the Frigid Zone,” all prolonging and even enjoying existence, under circumstances the most dissimilar, and in some instances apparently the most unfavourable. Compare one, the denizen of a favoured clime, whose sunny sky is at once his garment, and mansion, and upon whom nature pours forth the horn of her abundance, at the smallest expense of thought and labour; with, his less favoured brother, who, during a moiety of the year, does not willingly expose himself to the inclemency of the elements, unless like the wild inhabitant of the forest, he be driven forth by the pangs of hunger, and who is compelled to snatch a coarse and scanty existence from a churlish soil, or a frozen and tempestuous ocean. Yet, to those existing at both extremes, as well as to the inhabitants of all intervening countries, are so much of the bounties of nature allotted; or their deficiency is so wisely provided against by compensating circumstances in the individual, or his external relations, that all are willing to echo the patriot sentiment, that—“Where'er we roam, our first, best country, ever is at home.” In this Lecture we had the advantage of listening to one who had resided in that delightful clime—one whose education and refined tastes well fitted him for describing scenery, manners and customs, or his own personal adventures.

The industry and research of the Lecturer “*On the Origin of Railroads in England*” must have been very great to collect and

arra
ject.
wha
revi
Befo
of p
wou
inst
visi
abil
and
woc
trav
bee
fam
Tw
the
thei
opin
thin
lab
a to
tom
val
S
sta
ter
imp
wo
Du
be
phi
me
na
ex
to
of
log
bee

arrange his materials for this instructive and entertaining subject. Nothing will serve better to sober down our judgment of what is great, or wonderful, among the productions of man, than reviewing what has been done in Railways this last thirty years. Before that period railroads were looked upon by a large majority of persons as insane, impracticable and visionary schemes, which would never be brought into successful operation. At present, instead of deeming railroad schemes insane, impracticable and visionary, we regard them as splendid monuments of engineering ability, and as being one among the means by which the social and commercial relations of life may be benefitted. From the wooden rails of the collieries, to the introduction of iron rails traversed by steam carriages, what talent and genius must have been exercised? Watt, Gurney, and Stephenson, names as familiar "as Household Words," in connection with this subject. Twenty years hence we may perhaps look back with a smile to the time when locomotive carriages travelled on railroads at their present rate. Such are the changes in our feelings and opinions when we become accustomed to any particular state of things; this ought to teach us, while we properly appreciate the labours of those who have benefitted society at large, not to have a too great fondness for things to which we have become accustomed, to the exclusion of changes which may turn out to be valuable improvements.

Symbols was the title of the next Lecture. In the present stage of language we have become so habituated to the use of terms applied metaphorically, that we seldom reflect on their import. There are many instances in which the metaphorical word remains, when its primary signification has been forgotten. During one period of the world's history, the only language may be said to have been symbolical. History, religion, systems of philosophy, and of morality, were all wrapt up in allegory and metaphor. This is still peculiarly the language of the Eastern nations. The language of poetry, in every clime, is almost exclusively that of metaphor. The Lecture principally referred to the symbolical language of the present day, and its abuses.

The two last Lectures of the Session were on "*Heads, as Types of Mankind.*" Agreeing with the best Physiologists and Ethnologists that the Head and its constituent organs afford by far the best "*physical and moral* character for distinguishing the different

aces of men ; it was adopted in its forms, relations, and conditions, as the source of elementary principles in these types.

We must receive the views of authors on this important subject with suspicion, especially when the original unity, or plurality, of the human race is referred to. By reference to the *best* and *wisest* of books, the Bible, we find our descent from Adam and Eve is frequently alluded to, both in the Old and New Testament, and not merely as an indifferent fact, but as one of the fundamental truths of revelation ; and any supposed obscurity in the Book of Genesis completely dispelled. Believing then the authentic history of the Sacred Scriptures, we consider this unity as a self-evident fact ; a fundamental truth, susceptible of perfect demonstration. The contrary opinion having clearly the aspect of a speculative assumption, conceived by fancy, propounded by vanity, and unsustained by a single trace of probable testimony, analogical or inductive. To the papers of Professor Wilson, of the Toronto University, in the "Journal of the Canadian Institute," these Lectures are mainly owing. We will reserve further comment till the subject is complete, as the Lecturer promised they were to be resumed next session.

Such is a short summary of the principal literary labours of the past session, and having glanced at each, it will, I think be granted, that the subjects have not been deficient in interest, nor in those connected and related materials for thought, which, by inviting and leading to the action of the intellect, expand and strengthen it, and thus supply what must ever be to non-professional persons and amateurs one of the chief objects of study.

Our efforts have hitherto been confined to the delivery of Lectures *principally* literary, and although much has already been done, we have not yet derived the benefit which would result from a greater combination of our efforts. Our Lectures have been too desultory, and thus deprived of those advantages of which they would have partaken had they been more connected with *Science*, and some of the different branches of Natural Philosophy. Let us take for instance *Geology*, a subject engaging the attention of every educated person. "Next to the knowledge of the laws of life and the phenomena of the human body must stand, in interest, the knowledge of the phenomena of the earth, and the various processes of its history. When we have learnt something about ourselves, we naturally wish next to learn something about the world wherein we live, and with which we

are connected by a hundred subtle but powerful affinities; therefore Geology to us has always seemed in interest second only to physiology. It is indeed very natural that man should seek to acquire an insight into the mysteries of his own constitution; but, that insight gained, it is equally natural he should begin to question himself upon the probable origin, the life-history as it were, of the earth whereon he has to work out his destiny. We do not wonder therefore, that Geology is becoming one of the most popular, as it is one of the most attractive of the sciences. Earth itself is the geologist's workshop; and every rock is a laboratory where he may conduct his investigations." What can interest us more than the products and resources of this our adopted country? A great deal has been done already, and is now carrying out under the enlightened superintendence of Sir William Logan. Then again, Geology is a science in my opinion, primarily and peculiarly distinguished by the enormous spans of duration which it discloses. It has struck me, that it thus stands in a kind of contrasted relation to Astronomy, which deals in measure of space and bulk commensurate with the periods of Geology, but does not offer a single proof that would necessarily indicate an earlier date to the existences around us than that which popular opinion generally assigns to them. We are, however impressed with very different ideas when we pierce the surface of the Earth, and explore with patience the grand receptacle of Nature's antiquities. We there meet in the different organic and inorganic remains of former conditions of our planet, what may be called the *coins* and *medals* which mark the epochs, and chronicle the events, of myriads of buried ages. These, if studied aright, offer us unquestionable proofs that our Earth has undergone a succession of changes and catastrophes, marked by the alternate prevalence, at the same spots, of dry land and water; and that these vicissitudes have been accompanied by the alternate destruction and reproduction of animals and vegetables, many of which were essentially different from any now in existence. It thus appears proved that, in the series of revolutions of which our Planet has been the subject during unnumbered ages, many species must have been swept away and totally lost; and we are, perhaps, allowed to infer, that there have been successive creations to supply their place, till we come down to that comparatively recent period marked by the creation of Man himself, the latest born of Earth's deni-

zens, but gifted by his Creator with the plenary rights of primogeniture, as Master and Lord of all.

The study of these remains, and a comparison of their nature, with that of the strata in which they are found embedded, would also appear to warrant the conclusion, that, as the period of their creation and existence were more remote, the different animals belonged more exclusively to the cold-blooded and amphibious classes. The vegetation, too, of those early times, seems to have been of the monocotyledonous or marshy class; as if the conditions both of animal and vegetable life were in keeping with the state of a world scarcely emerged from the waters, or at least whose surface and atmosphere were unfit for the growth and vigour of a large portion of the present constituents of the animal and vegetable kingdoms. The earliest production of warm-blooded vertebrata appears to have been long posterior to the period here alluded to—*anterior to which we seem to meet only the remains of reptiles, fishes, testacea, and zoophytes, we reach a time, as it were, on the very confines, and amidst what we may call the twilight and dawn of the creation, which can be marked only as that era referred to in the Sacred volume, when "the morning stars sang together, and all the sons of God shouted for joy."* Thus the various layers, as we pass from the primary and unstratified, up through the stratified transition, secondary, and tertiary formations, both throw light on and receive elucidation from the organic remains; and although a difference of opinion may exist, as to the successive developments of the forms of animal life, there can be no doubt that many tribes of creatures have become extinct, and that the surface of our earth has undergone a series of alterations, the earlier of which must be referred to periods of immense—I had almost said of overpowering antiquity. Change and mutability, decay and reproduction, would thus appear to be the lot of all things—not less of what have been called the "everlasting hills" and outlines of a continent, than of man's more frail and perishable works. Time as certainly crushes the one as the other under the sceptre of his power; and the motto, "passing away," applies to all that is, as it applied to all that *has been*.

If we seek for the agents of these tremendous changes, we shall find them operating all around us, with constant though often unnoticed activity, and shall learn, that amongst them may be numbered apparently the feeblest, as well as the most energetic

powers of nature. Thus that portion of land which we may conceive the earthquake to have elevated above the level of the surrounding waters—either suddenly, in one tremendous effort, or by a series of lesser throes—may also have been reared and built up amidst “torn ocean’s roar,” by the labours of the coral insect, aided and finished by the tribute which the ceaseless surge and wandering sea-fowl leave on the rising shore. The same up-heaving energy may either engulf it again, as suddenly as it was raised, or may, for an indefinite period continue to add to its surface, by throwing up a range of volcanic mountains. The time, however, at length arrives, when their activity slumbers or ceases—when their fires pale, or are extinguished. From their snow-capped summits, and down their now verdant sides, distil the streams and rivulets which unite to form a majestic river in the plains below. But every rill, as it descends, carries away a portion of the surface over which it trickles, and bears it to the general bed; the river, in like manner, wears away its banks, and carries off its accumulated load, the spoils of the land, to deposit them perhaps far out at sea. The waves, tides, and currents of the ocean breach and sap the neighbouring shores with irresistible effect, and the disintegrated materials, as well as those received from the tributary rivers, are distributed in situations whence they are destined to emerge as the continents and islands of a future world. The chemical and mechanical effects, also of the air, of the gentle dew and blessed rain, assisted by the varying temperature of the seasons, deface and destroy even the surface of the primitive rock, and reduce it to that state in which it becomes subject, in the mode above indicated, to the transporting agency of running water, even more effectually than does the bolt of Heaven, which blasts and shivers it. Still, amidst all changes, we find life, and the enjoyment of life—(and here you may possibly recollect some passages in my Lecture on “Life and Organization”)—apparently the final object of every operation in nature—surviving through each convulsion, and renewed in the class or order, though lost in the species or individual, triumphing amidst “the wreck of matter and the crush of worlds.” Nature receives into her bosom the remains of her children, and casts over them the pall of her green and variegated mantle. She speedily hides the traces of ruin and devastation, and employs the materials they have furnished for the construction of a fairer order of things than that which has been. She

weaves her chaplet and hangs her wreath of flowers around the rock, still bearing marks of the primeval fires by which it was generated, or down the rifted dell, which first yawned amidst the terrors of the earthquake, or was excavated by the destructive powers of the flood or torrent, and thus invests the reliques of desolation with the garb and livery of life and beauty. Such are some of the strange and varied wonders of Geology, presenting Nature to us under an aspect she never wore before.

Then, again—the doctrine of Heat, a subject whose bearings and relations afford a wider range for the exercise of thought than perhaps any other branch of physical science. Wherever we direct our attention, in the realms of Nature or Art, we meet the powerful agency of Heat, as the master spirit which presides over or accompanies every change of form and condition. Its subtle essence—whether we consider it as consisting of undulations, like those of light, propagated through some elastic medium—or as a material though imponderable agent, darting in right lines between the surfaces of all bodies, or permeating their substance—modifies the attraction of cohesion, and determines the form which matter will assume; whether it shall exist like the air we breathe, whose unchecked freedom no spell has yet been able to imprison within the bounds of visible shape and outline—or shall present the fixed density of the most infusible mineral or metal.

The source and dwelling-place of Heat may be said to exist throughout the immensity of space, and in all the various modifications of matter which it contains; for although Heat appears to stream off, in unusual and characteristic profusion, from some objects, such as the sun—it will also, if properly sought for, give ample and ready proof of its existence in others, the coldest, darkest, and most cheerless,—and we know that it is released or imprisoned in considerable quantities during most natural operations. It requires the presence of Heat, not only to relume the fading torch of life, but also to give its energies an extent and development which they had not before experienced, as we see in the germination of seeds, and the still more curious process of incubation.

The history of these inventions to which Heat has been subservient, comprises in fact, the history of the intellectual and social progress of our species.

The power of producing artificial Heat, and a knowledge of

the more obvious and indispensable uses which it is calculated to fulfil, were, no doubt, among the earliest results of the exercise of that reason which already distinguished primeval man from the beasts of the surrounding forests, as well as the first step in the path of civilization. From that period, up to the present hour, it has materially contributed to the advance of the welfare of society, by investing Man with the control of the metals, the most useful but refractory class of natural productions. Through its assistance, he has been able to forge and fashion the weapons, tools, and lastly machinery, by means of which he has completely asserted his mastery over all other creatures, supplied his wants, increased his comforts, and multiplied his powers ten thousand fold. Finally, if we wish to place in the strongest contrast the two extremes of civilization—the one soliciting, the other urging, yet controlling the same powerful but beneficent agent—we have only, with a modern philosopher, to compare “the savage, who laboriously kindles two sticks by rubbing them, with the experienced Engineer, who combines all the deductions of science in wielding and directing the resistless force of steam.”

Another subject has also been omitted from our Lectures, viz.: *Hydrostatics* and *Pneumatics*, or those sciences which treat of the motions and pressure of non-elastic and elastic fluids, of water and air. The all-pervading nature of these *media* will at once impress you with some idea of the interest that must attach to a knowledge of these properties—especially when we recollect, that the influence which they exert in consequence of them is second only to that which arises from their supplying, either mediately or immediately, the breath of life to all living creatures.

The simple law, that water tends to find its own level, is also fertile in beneficial consequences to mankind. To it we owe not only the roar of the cataract, but also the flow of the river, that bears the productions of man to their destination, and the equally beneficial agency of the humbler brook which proves such an unceasing and economical source of power and originator of motion to our various manufactories. Neither should the gushing spring be forgotten, which, in obedience to this law, pursues its unseen path, and rises at last to the surface, to dispense its pure and sparkling blessings around. The illustrations and analogies afforded by the visible phenomena presented to

our notice in the motion and disturbance of water, assist us to comprehend the more obscure laws which regulate the transmission of *Sound, Heat, and Light*. A knowledge of *Pneumatics* discloses results quite as strange and unexpected as those flowing from the general laws of Hydrostatics. Thus is it not a subject for surprise, when we learn that every square inch of the surface of our bodies is loaded with a weight of more than 14 pounds! and yet, so equally is it distributed within, as well as around us, that we not only perform all our movements unaffected by it, but are actually unconscious of its existence! The atmospheric ocean above us has not only its waves and tides, but also its currents, as well as that which flows around us—from the gentle zephyr, that scarcely moves a leaf in its passage, to the hurricane which prostrates all before it, and marks its path by desolation. The expanse of the one as well as the depths of the other, is the resort of numerous tribes of living creatures; and the sphere and extent of life and enjoyment thus receive an addition, which in a peculiar manner displays the exhaustless variety of methods in which creative wisdom can manifest itself.

It has been a matter of surprise to me that some of the Medical Gentlemen of this "our County Town"—men too, of high education, observation and talents, should not have given us a Course of Lectures on *Physiology*, a subject that abounds in research and contemplation, which should recommend its study to every enlightened mind. Let us employ a few moments in adverting to, and considering some of the peculiar and characteristic wonders of life and organization.

Who can sufficiently admire the exquisite mechanism and wonderful endowments of the Eye, the presence chamber of the body, at whose open portals the images and species of all external things come crowding in, along with the beams of the morning, and cease not entrance till darkness or fatigue drops the curtain over it!—Or the nice perceptions of Hearing, which lurks, like some secluded nymph in her grotto of rocky bone, with all its mysterious recesses and windings; the last of the senses to yield to the seductions of repose—the first to give the alarm, resume its habit of wakeful vigilance and rouse up the torpid and slumbering frame! The Tongue whose outline apparently so clumsy, yet performs such an untold variety of rapid and precise movements! The Heart, which momentarily renews its unwearied efforts, during all the period that intervenes between the earliest

dawn of existence and the last moment of life, and propels the purple tide in one unceasing flow during perhaps eighty or a hundred years! The Bones, like strong pillars, hollowed within, to combine lightness with strength; small at their centres, for the sake of symmetry and convenience—large and protuberant towards their extremities, to afford sufficient surface for mutual articulation! The Joints or hinges of exquisite mechanism, by means of which these bones play on each other—and the power of self-motion, or contractility, which sets all this admirable machinery in action! Again, what miraculous qualifications, what high privileges, do we find attached to that soft and interwoven mass of grey and white fibres, that we call the Brain, which sits in the supremacy of delegated power within the “palace dome of the soul,” apparently the connecting link between the material and immaterial parts of our nature! It there receives the reports from every part of the economy, through the faithful agency of the nerves, and through them transmits again for immediate execution, those dictates and commands, the result of counsels and deliberations, to which it alone is present or privy! How wonderful—how inexplicable—the single fact, that we are able at pleasure to raise the hand, or to perform the smallest movement! Who can unravel the mysteries of that condition in which we lie, when the dews and poppies of slumber are shed over our temples? Sleep, whose gentle but resistless influence binds the strength of manhood, as it cradles and nurtures the helplessness of infancy; that state in which we are, and yet are not, with its varied rack of many-coloured dreams, which cross the mental disc—now mimicking the realities of waking life—now troubled, distorted, and monstrous, as the reveries of madness; at one time shaped and coloured by the nobler and brighter parts of our nature—at another, apparently dictated by the darker and more ignoble. Thus may our sleeping fancies be said to demonstrate the mingled clay of which we are formed, and to sober our judgments, by detecting some tendencies which may still lurk in the depths of our being, though self-love may have veiled and disguised, or reason and religion rebuked and subdued them. Finally—compare the infancy, the vigorous maturity, and the shrivelled senility of an individual—“another, yet the same”—and who could identify them?—“the smoothness and the sheen of beauty’s cheek,” with the wrinkles and decrepitude that await her—or, last of all,

the flush and activity of youthful vigour, with the "cold obstruction" and repose of death. All these are brought before us and presented in the study of *Physiology*; and I might still multiply examples of the same kind, but I have already trespassed too much on your patience.

The chief object of an Institution like ours must be to create and foster a taste for refined pleasure, and for intellectual effort, even where the latter does not appear immediately subservient to the serious business of life. We do not expect to render our auditory profound Philosophers, experienced Geologists, or skilful Naturalists—nor yet seek to imbue them deeply with the mysteries of Science—still we may hope to allure them to habits of observation and reflection, which shall interest them in a thousand phenomena at present passing almost unnoticed around them—phenomena which, to the educated eye and cultivated mind, all become of importance, as forming a part of that endless chain of operations, whose lesser cycles indeed we can span and measure, but the commencement of whose more extended sphere disappearing amid the remoteness of an immeasurable antiquity, and which is destined to continue till the fiat of the great Author arrests or changes it. I would ask—whether the noblest prerogative possessed by civilized *Man* above the *Savage*, consists not as fully in his internal resources for dissipating the languor and tedium of existence, and relaxing from graver duties in the delights of social intercourse and mental recreation, as in a more complete mastery over the difficulties of supplying his animal wants and gratifications?—whether the hearth of the one, contrasted with the wig-wam of the other, be not less favourably distinguished by the superiority of its provisions for luxury and comfort, than by the enjoyment of a more exalted tone of conversation, embracing a more refined and expanded range of topic, and glowing with nobler sentiments, holier sympathies, and kindlier feelings? If the answer to these questions be in the affirmative, then should this and every similar Institution, likely to assist the progress of intellectual and social amelioration, be dear to all who pretend to value either. I should wish, however, more particularly to draw your attention to some of the peculiar advantages held out by this Institution, in furtherance of this good work, both to the Lecturers and Auditors—to the Teachers as well as those taught.

In the first place, the Lectures delivered from this place tend to

clear away some of the difficulties besetting the temple of knowledge. As the matter is necessarily condensed, the fruits of much study and thought, the acquisitions made, and the conquests achieved, at an expense of much time and labour, are presented to the tyro in a simplified form, and generally within the space of an hour. He is thus at once initiated, and spared much of the toil, which it would cost him to obtain such an insight into the subject as renders it thus attractive. He is, as it were, raised to an eminence, commanding a view of the whole territory; its more interesting features are presented to him, and he is encouraged and cheered to court a nearer acquaintance with that which even at a distance appears so alluring.

Nor are the advantages less as regards the Lecturers themselves. They are, in the first place, induced to study subjects which, perhaps, would not have otherwise attracted their notice; they are obliged to read with attention and discrimination, and to methodize and arrange their stores of knowledge. If it be objected, that these benefits are confined to a few—I reply, that all who feel inclined to avail themselves of them may in turn do so. That ability exists in considerable abundance around us, there can be no doubt; that it too often slumbers, unconscious of its own existence, or unnoticed by others, is a circumstance to be regretted, and as far as possible obviated. To those therefore, interested in the Youth of our adopted country—to Parents, especially—it should be a subject of congratulation, that an Institution like this exists, where young men may make their first essays, and acquire strength of opinion for a bolder and more enduring flight—where comparative want of success cannot be of any great importance—and where the first immature fruits of the intellect may be shed and tasted, in anticipation of a more ripened harvest. If this Institution succeed and prosper, as we may hope it will, who can tell how soon we may be able to point to some one, destined to adorn the annals of his country and benefit his race, whose nascent energies will have been roused and stimulated into activity by the arena for intellectual effort afforded by this platform? Can any of those before or around me look forward to the bare possibility of such an occurrence, and not feel that it contains, in the half formed hope and fervent aspiration that wings it, both stimulus and reward sufficient for any trifling expenditure of time and money which the support of this Institution may require? It should also be borne

in mind, that we here, possess these peculiar advantages without the objections to which clubs and some other societies are obnoxious, in this country especially. Our very constitution prohibits the introduction and discussion of those subjects which most speedily enlist the passions and disturb the harmony of mutual intercourse. To my mind it constitutes no small recommendation that we here possess a neutral ground, on which men of all parties may contend without rancour, and bear away palms which do not cost their opponents one embittered or unhallowed feeling. We have common subjects on which all may agree, without being taxed with any interested compromise of opinion, and concerning which they may differ, without alteration in mutual feelings, or diminution of mutual esteem. A bond of fellowship is thus frequently formed between those whom circumstances would otherwise have kept for ever asunder; and if men come at all into collision, they are actuated by feelings of generous rivalry, not so closely interwoven with the absorbing interests of life as to arouse the meaner passions of jealousy.

Lectures delivered from this place labour under a serious disadvantage, and the Lecturer is pressed between two difficulties: he is either compelled to omit or pass slightly over those elementary topics, for a knowledge of which he cannot and should not always give an amateur audience credit—or, if he dwell on them, he necessarily presents an imperfect and restricted outline of that which he professes as the great object in view. I have made this statement with the hope of blunting the edge of that criticism, to which ours, as well as all human efforts are obnoxious.

In conclusion, we may ask what would have been the opinion of Doctor Johnson, the great Moralist and Philosopher, if he had lived to see these Institutions? He would undoubtedly have admired and appreciated the influence which they possess, for spreading a mental culture, and a love of Letters, through all parts of the community. But whilst he admired and appreciated, he would (if we may conjecture with all humility, the opinion of so great a man) have warned us of a possible risk; he would have reminded us of a certain duty. He would have warned us that the Lectures of these Institutions, although they undoubtedly form a part, and a very important part of education, are not Education itself. It is the duty of this Institution not merely to teach but try to morally elevate all who fall within the sphere of its influence. Let us all then who take

an interest in these concerns—concerns which materially and vitally affect our happiness—see to it that the Education we are thus sensibly and insensibly spreading, is competent to ensure the object which it has in view. Knowledge has often been said to be power, but it is only power upon one condition, and that is, whilst it is confederated with its great—its natural ally—the first principles of Religion. I endeavoured to show you in my Lecture on “Popular Education,” how associations of former days perceived this truth; how those great human associations which existed and prospered, did exist and prosper, because they were founded upon the united sanction of Religion and Knowledge. Even the Heathen world—

“They who have bowed untaught, to nature's sway,
And followed truth along her star-pav'd way,”

even they apprehended by the dim shadowy light of conscience, what we *know* in the full noon-day of revealed certainty—they recognized and appreciated this truth; it is for us to act upon it. In these Institutions then, in the whole educating machinery of this country, the more you deepen the foundations of Religion, the more shall you strengthen the hands of knowledge. Lord Bacon, one of the wisest and greatest statesmen Britain ever saw, has said—and his saying has been often quoted and repeated—that a little knowledge makes a man irreligious, but extended wisdom brings him back to devotion.” If we fail to recognize that God is the author and measure of all truth; if we exclude the consideration of His agency and will from our social, political and educational schemes, the pillar of our society, the edifice of our education and policy, will rush into headlong and baseless ruin. Without the interpretation of His law, History would be but a confused record of crimes and misfortunes, the exquisite structure of the animate world, would be but the creature of accident; justice and law would be based upon a human contract, or the will of the strong; and that great science of politics, in which in a rightly and constitutionally governed country, every citizen has his appointed place and duty, would be but the selfishness of unscrupulous ambition.

On looking over the Report of the Committee of “the Toronto Mechanics' Institute,” the Report states, that the Committee had continued to supply the library, with the new works published, and it now contained 3928 volumes, &c. Now here is a large library attached to an Institute. What should prevent the men

of the County of Simcoe emulating the men of Toronto—nay, from surpassing them by engrafting a *muscum* as well as a library on our already useful and established Institution? Look what the Canadian Institute has already done, as regards its museum! We must bear in mind that every year the plough is obliterating the last traces of our predecessors upon this soil. Every year the axe lays low some invaluable witness to the ages which have elapsed since populous villages of another race were scattered far and wide through our now lifeless forests. We are fast forgetting that the bygone ages even of the new world were filled by living men, and fast losing by neglect all those delicate links in the chain of research by which the Archæologist of another generation may hope to trace out the origin and the fortunes of a great branch of the human family. If it has been found, even in Great Britain, that scarcely five per cent of the rare and interesting remains from time to time brought to light, are recoverable after a few years, unless they are lodged in some public museum, we may be very sure that a proportion even larger, of such remains as Canada furnishes, are lost for want of such institutions. It only remains, therefore, for those blest with leisure, to avail themselves of the natural advantages so richly furnished on all sides; and, as soon as we are in a condition, through our own exertions, and the assistance of our friends, to declare ourselves in possession of even the nucleus of a Library and Museum. We may surely hope that the day may arrive when a *Barrie Museum* and *Library* will arise to illustrate and extend the utility, and perpetuate the name of the *County Simcoe Mechanics' Institute*.

o—nay,
a library
ok what
useum!
terating
ery year
ch have
attered
fast for-
re filled
te links
another
tunes of
d, even
nd inte-
recover-
e public
arger, of
of such
st with
o richly
dition,
ends, to
Library
y arrive
ate and
Simcoe

