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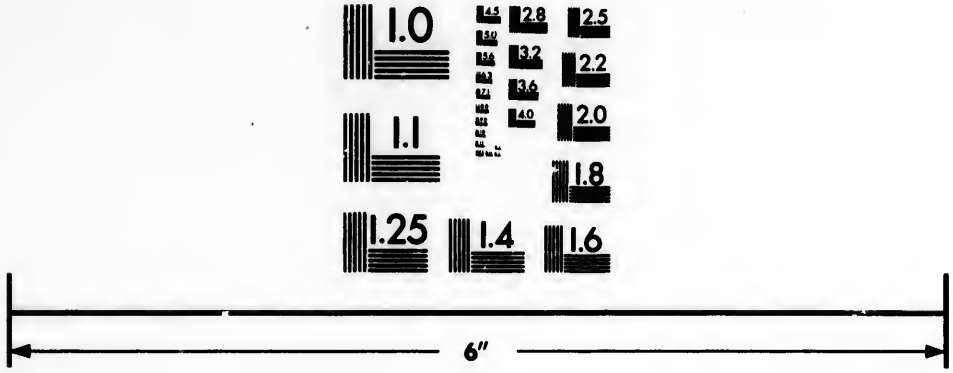

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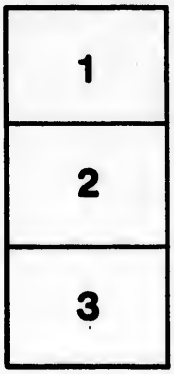

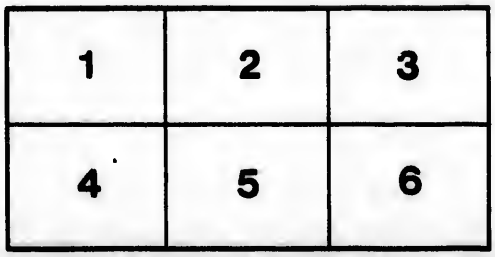

ANNUAL ADDRESS

DELIVERED

BEFORE THE MEMBERS

OF THE

FREDERICTON ATHENÆUM,

MARCH 1, 1858,

BY

JOHN WILKINSON, C. E., PRESIDENT.

PRINTED BY ORDER OF THE SOCIETY.

FREDERICTON:
PRINTED BY J. SIMPSON, AT THE ROYAL GAZETTE OFFICE.
1858.

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ANNUAL ADDRESS.

The lapse of another year of the placid, but, I hope, not uninteresting history of this Society, requires us to retrace together the path we have trodden during some pleasant hours, I trust not without mutual profit and much rational enjoyment. It is undoubtedly true that the waymarks by which we have endeavoured to retain that path in agreeable memory have not been increased by a number of literary efforts equal to the average of preceding years. I think we cannot fairly impute this to absence of effort; for I believe that engagements of this kind have been seasonably fulfilled; but to absence, I am sorry to say, of another kind. The number of members in attendance have, on more than one occasion, been insufficient to form a meeting agreeably to one of the rules of the Society. Whether the stringency of this rule might not be so relaxed as hereafter to obviate that difficulty without involving some greater inconvenience, is a point which has from time to time been mooted, without leading to any definite proposition. In a Society as yet so limited in number, not one of whom has the advantage of much freedom from peremptory engagements and hindrances during the greater portion of his time, it would be somewhat sanguine to expect that the attendance should never fall short of the requirement of the rule. On the whole, a review of the instances of failure under such circumstances would, I am persuaded, be such as to form no ground of discouragement. On the contrary I think it would appear that the steady zeal of a certain number of our members has always been so far superior to ordinary causes of absence, that in most cases, had the number required been less by a single unit, in order to form a meeting, the members present could have proceeded to business. Whether this may be a sufficient reason why the rule should be so far changed as to cause in future the less frequent disappointment of those who

punctually attend; or whether it should be retained as it is, in confident reliance upon an increased vitality of the Society through a more lively interest and earnestness in each individual member from henceforward, are alternatives worthy of our consideration. For my own part I am disposed to prefer the latter. If through apathy and indifference we should permit our Society to fail, it would, I am sure, be a cause of enduring regret, if not of self-reproach, to each of us. In the times in which we live, under what other auspices could we meet with equal unity and good understanding, for the free interchange of thought, opinions, and speculations, on subjects of interest, possibly, in the course of events, of great interest, both to ourselves and to others.

Of the Papers read before the Society during the year, the first in order was that entitled the "Chivalry of the middle ages," by Mr. Roberts. It will be remembered as a lucid and graphic epitome of the history of an institution surrounded with romantic interest, the influence of which on society and manners has no doubt descended to the present time. The chivalric era was that which marked the gradual but slow transition of European society from a semi-barbaric and exceedingly unsettled condition, to that of a more refined civilization, settled government, and general regard to the principles of virtue, truth and justice, amongst all classes. During such a transition the social atmosphere could not be otherwise than frequently blackened and rent by those stormy elements which entered into the process of purification. The most energetic and prevading of those elements was, no doubt, under Providence, the spirit of chivalry. I apprehend that the general views and deductions of Mr Roberts are in close accordance with those of accredited historians. My limited acquaintance with the subject does not qualify me to add any thing to what he has said so well; and I accept with deference the pleasure and instruction derived from the pains and research embodied in this paper.

In the succeeding month (April) a Paper on the subject of "Chess," was read by the Rev. Mr. Spurden. I should have

been glad to have refreshed my recollection of the manner in which the subject was treated by referring again to this paper, but regret to find, upon enquiry, that it is out of reach; I have further to regret that the author is not amongst us this evening, and that his connection with us has been so brief. His steady manifestation of interest in our proceedings, and pleasing literary contributions to our edification, claim for him our kindly recollection and best wishes. To return to my subject: We are told that the very ancient and scientific game of chess has been known from time immemorial in Hindostan by the name of *Chaturanga*, subsequently in Persia as *Chatrang*, and in Arabia as *Shatrang*; if my memory do not deceive me, the introductory part of Mr Spurden's paper was an ingenious endeavour to trace through various countries and languages the gradual transformation of the Asiatic "Chaturanga" into the English appellative of "Chess." Whether he were quite successful in detecting the rather distant relationship of these somewhat dissonant terms, I must necessarily leave to the judgment of those conversant in etymological and Asiatic lore. Whatever the vicisitudes of its orthography, this elegant and refined game seems to have retained, from the oblivion of remote antiquity to the present hour, a certain dignity as the solace of the private hours of the highest and the noblest, whilst equally ready to lend its charm to the leisure and relaxation of the humblest. The principle aim of Mr. Spurden was indeed the philanthropic one of recommending the game as a means more or less within the reach of all, of rationally and agreeably unbending the mind at those intervals which are universally felt and acknowledged to be necessary, and without which both the bodily and mental energies would soon become prostrate. He was equally careful to distinguish this salutary object from the idle and vicious one to which all amusements whatever may be abused. It would appear to be no slight recommendation to the more general cultivation of this game, that its quiet and domestic fascination should be sufficiently powerful to wean a very numerous class from less innocent resources. During the conversation which followed the reading of the

paper, it was remarked by one of our members, whose comparatively recent opportunities of personal knowledge gave the more interest to what he stated, that the rapidly increasing appreciation of chess amongst the working population of England had been noticed as a gratifying indication of their social and intellectual improvement.

In the month of May a Paper was read by Dr. Tolderv on those diseases which, during his long professional experience, he has noticed as more particularly incidental to the locality of Fredericton and its vicinity. Such a paper would, I conceive, be valuable to the medical profession anywhere, but to us and to residents of this neighbourhood it is of special interest. It is not my province to dwell on the pathological details which the author has so comprehensively and lucidly brought together, but I have a few words to offer on his concluding remarks. Substantial measures of sanitary improvement are liable to be too long neglected even in old and wealthy communities; and in those which, like our own, are comparatively new and slow in increase of numbers and wealth, mere temporary expedients are from year to year adopted in order to ward off the evil day; but as population becomes more dense, such expedients are seldom if ever adequate to prevent the accumulation of impurities and consequent aggravation of disease, until it breaks out in some pestilential form; and not till then, under the impulse of sudden alarm and dismay, are necessary measures gladly adopted at almost any cost, which during the period of comparative ease, health and security, were not thought of, or continually deferred. We have seen this illustrated in many of the principal cities of Europe and America, especially since the visitation of the cholera. It may be that the urgency of such measures in Fredericton is not so great as in many places of larger population. The locality may on the whole be regarded as comparatively healthy. The town is most favourably situated for drainage into the magnificent River on the margin of which it rests. But it is doubtful whether any thing like an efficient drainage has yet been attained, and it is certain that nothing more than the ordinary rainfall and

the melting of the winter's snow form the agencies for washing off the accumulating surface and other impurities. To a great extent indeed, these are not washed off, but, from the level character of the ground, are necessarily absorbed; whilst the water which must form the beverage and enter largely into the food of the great majority of the inhabitants, is mainly, if not wholly, derived from wells supplied by the slow filtration of such washings through the surrounding soil. We know what the character of such surface washings must be, especially on level ground, where barn yards, stables, pig styes, and other sources of vegetable and animal accumulation in process of decay and solution are already numerous and continually extending. It has often occurred to me that these circumstances could not continue many years without sensibly affecting the salubrity of the Town; and that some mode of relieving the inhabitants from dependence on the ordinary wells for a supply of water must eventually be devised. The information communicated by Dr. Toldervy is somewhat startling evidence of the importance of this question. After adverting to the views of others, eminent in the medical profession, as to the influence of certain conditions of air and water in producing *epidemic* diseases, especially arising from the presence of cryptogamous fungi, he proceeds to say, that *endemic* diseases more particularly proceed from local causes; such as the decomposition of vegetable and animal matter, effluvia from cesspools or vaults, imperfect drainage, unwholesome and impure food, impure water, starvation, &c. "Water," he adds, "constitutes a most important and essential part of our food, and it is highly necessary that it should be pure; for even of the solid food which we eat, water constitutes four fifths. It may be said that even nine tenths of all the food we take is water." "Now," he continues, "with respect to the existence of cryptogamus plants and their spores in the atmosphere, I am not prepared to say much, but that they exist in all the water we drink is evident enough. I have made a microscopic examination of the water taken from ten or a dozen wells in different parts of the city within the last few weeks, and they

are all rich in fungi. The most common is a species of the botrytis family. In relative proportion to the quantity of this fungoid growth in any water do you find a corresponding amount of animal life, from the simple virbrione and monad up to the parameclum, vorticella and rotifer."

Such, then, is the compound which we are in the habit of consuming as pure water. With lips parched by the heat of summer, we hold it up to the light, admire its cool and crystal transparency, and unable to detect with the naked eye a floating atom, we freely quench our thirst with a liquid load of vegetable and animal life. How far these ingredients may be rendered innocuous by the process which water must undergo in the preparation of our ordinary food, we cannot tell; but it is certainly desirable that, as a general rule, they were not there at all.

The expense is, of course, a standing obstacle to sanitary improvement everywhere. But it may not prove comparatively expensive to obtain a supply of pure water for this City. The first underlying stratum of clay is that which holds the surface water, and forms the bottom of all the present wells. Below this the surface impurities cannot penetrate, and may be seen finding their way from this level at various points along the bank of the River. No experiment, that I have heard of, has been made in order to ascertain how far below this stratum of clay it may be necessary to penetrate, before reaching another and more ample and unfailing supply of water in comparatively a pure state. It is not probable that this depth need be much lower than the lowest surface level of the River Saint John, say from 25 to 35 feet, according to the situation in which the borings may be made, or about double the ordinary depth of the present wells. The situation of Fredericton would appear to be highly favourable to this mode of supply. At the worst, the question would become one of comparative expense, whether the emergency could not be met in some other way.

It is highly probable that a liberal supply of pure water could be procured, by collecting the springs which issue from the high ground in the rear of the City; perhaps sufficient for

the population for a long time to come. There is, however, a still more copious supply available, though at greater expense. This would be from streams within a distance of from two to five miles, with the important advantage of flowing from a high level, say within a range of from one hundred to two hundred and fifty feet elevation above the level of the City, as might be deemed most advisable. At a rude estimate, I conceive that a supply on the most liberal scale for the sanitary purposes of 30,000 inhabitants could be thus obtained; but, including necessary filtration, the whole expense would be heavy. So large a demand would also be remote. At the present rate of increase of the population it would not occur within the ensuing half century. In the meantime, if the more available mode of sinking only to double the ordinary depth beneath our feet should prove to be effectual, then the important necessary of wholesome water ought not to be wanting to the poorest family in the place.

With these observations suggested by Dr. Toldervy's paper, I proceed to that read in the month of June by Mr. Vernon Smith, "On the past, present, and future of Atlantic Ocean Steam Navigation." The author engaged our attention by a vivid, comprehensive, and instructive resumé of each division of his subject, in a manner to be expected only from one who had given to it much patient consideration, *con amore*. His introductory remarks in substance consist of two general propositions;—1. That transatlantic steam navigation, from its too costly character heretofore, has not been so beneficial to these Colonies as their importance requires; and 2. That recent economical improvements in this mode of transport, now in successful and extensive use, are adapted to remove that difficulty, to enlarge the interests and to strengthen the ties between these Colonies and the Parent State, as well as rapidly to bring all nations into peaceful intercourse. Before explaining the improvements to which he alludes, Mr. Smith briefly sums up the previous history of steam navigation. He assigns the merit of the first successful attempt to Symington, a Scotch Engineer, in 1802; and not, as sometimes claimed by our

American brethren, to Fulton at a later date. After glancing at the epoch marked by James Watt's great improvement in the steam engine, and some of its more striking consequences in steam navigation, the author reminds us that the first really successful transatlantic voyage was made by the Royal William in 1833, a boat which was "a thorough Ocean Steamer, built at Three Rivers on the St. Lawrence, by Canadian mechanics, fitted with Canadian engines, commanded by a Canadian captain, and propelled by Nova Scotia coals." At this period the importance of steam power in the equipment of vessels of war, as well as in the commercial marine, had become generally recognized; and British skill and enterprize became largely engaged in perfecting its application.

The year 1838 witnessed the establishment of competing Ocean Steamers, and in the same year the British Government invited tenders for steam conveyance of the Mails between England and America, which resulted in the establishment of the Cunard Line of Packets. But notwithstanding the success of Ocean Steam Navigation as an achievement of nautical and mechanical skill, the lapse of many years of experience and improvement has tended only to confirm the memorable and sometimes derided prediction of Dr. Lardner, that, as then understood and applied, steam power could not be commercially profitable for ocean voyages.* It seems now to be admitted that the remarkable success of the Cunard Line of Packets, the unfailing regularity of which for nearly twenty years has been the admiration of both Continents, could not have been sustained without the large subsidy derived from Government; and that the same is equally true of the Collins' Line in the United States, is proved by its entire failure recently announced. In the meantime new methods have been variously tested, so as eventually to prove that though Ocean Steamers which retain the cumbrous paddle-wheel method of propulsion, may thus be unavoidably dependent upon adventitious aid for commercial success, it is not so with vessels which can fully unite

* Though the prediction is now put in this qualified sense, it was undoubtedly understood by intelligent nautical and mercantile men, deeply interested in the question at the time, that Dr. Lardner pronounced against the mechanical practicability of ocean steam voyages.

the advantages of both wind and steam, as permitted by the use of the auxiliary screw. Mr. Smith has explained in what these united advantages consist. They are such indeed that paddle-wheel propulsion may be expected at no distant time to fall into disuse; and that the total substitution of the screw will be preferred both in vessels of war and in those of commerce. The economical result involved in this completely successful transition from a very costly to a comparatively inexpensive method of steam propulsion, cannot be otherwise than very important to commerce universally; and I think we may agree with the intelligent author of this paper, that the successful commencement of the Canadian line of screw-propelled Ocean Steamers has evolved the bud and promise of a brilliant future, not only to that Province, but also to our own, if we in like manner avail ourselves of our geographical position and commercial resources. From a conviction of many years standing, it is not difficult for me to assent to the proposition, that, in connection with a judicious system of Railways, both Shediac and Miramichi have advantages which are wanting to many of the Ports at present adopted by Ocean Steamers. The peculiar advantage of Miramichi, during the period of navigation, is that of closer proximity to Europe than any other part of this Continent possessing equal recommendations as a point of divergence for railway communication with the interior. For ocean navigation, the distance from hence, say to Liverpool, in England, is shorter—

than from	Halifax	about 80	nautical miles,	or 8	hours in time,	
"	Quebec,	" 260	"	26	"	
"	St. John,	" 335	"	33	"	
"	Portland,	" 398	"	40	"	
"	Boston,	" 439	"	44	"	
"	New York,	" 630	"	63	"	

For continuous railway communication it is, as compared with Halifax—

229 miles nearer to Quebec,
70 " to Saint John,
160 " to Bangor in Maine.

The produce of the West could be brought by way of the Saint Lawrence to Miramichi as a commercial entrepot, at 70 to 100 per cent. less cost for transportation that by canal and railway to New York and other ports of the Atlantic. These would be the advantages of Miramichi during the summer season, or the seven months which embrace on an average about 80 per cent. of the business of the year. During the winter, the accumulated merchandize at this place could at any time take advantage of the market by means of about 170 miles of railway transportation to Saint John, or 120 miles less than between Montreal and the nearest Atlantic port. Such are the obvious geographical advantages appertaining to this Province for steam communication with Europe and elsewhere —advantages which have long been understood, and which recommend the eventual selection of such point on the Gulf coast as shall for all time be best adapted for an ocean packet station, and as a diverging point of a system of railways at once Provincial, Inter-Colonial, and Inter-National in its character.

In the concluding portion of his paper, Mr. Smith discusses with much intelligence and ability, the leading peculiarities and the probable success of the modern wonder of art, at the time known as the Great Eastern. The majestic proportions and perfections of this structure have since, however, been in due form better recognized by the name of "The Leviathan." The high anticipations which had been raised of the destiny of this future monarch of the waves, were, for a time, clouded by the partial failure of the first arrangements for inauguration in the element of her reign. The latest intelligence assures us that this difficulty is past; unabating interest will attach to all her future movements; a little while will test some at least of the multifarious speculations associated with this unparalleled enterprise, and prove whether the same model can hereafter be prudently repeated, or, whether a smaller description of vessel, with some or all of the like improved arrangements, may not be preferable. In either case it is evident that the enterprize of the day is vigorously aiming at, and no doubt will achieve, improvement in this direction.

In the month of November a Paper "on Eloquence" was read by the Reverend Dr. Brooke. This subject, interesting at any time, could not fail to be so in the hands of one whom, on previous occasions, we had found at home and in his congenial element, on kindred themes. On this occasion our Reverend friend introduced us to a right conception of the subject, by dismissing from our minds the notion, if such existed, that eloquence is merely an art devised by any system-builder of either ancient or modern times. He shewed us that it is not necessarily associated with the talents and acquirements by which the accomplished orator may command our admiration; that it is something independent of the mere graces of language which arrest the attention and please the ear; that it does not consist in the readiness of ideas, the fluency of well-chosen words, the abundant imagery, the aptness of illustration, the varied and declamatory tone and action which form the resources of oratory. These may co-exist with eloquence, but otherwise, however perfect, will not be eloquent. That in short, a clear apprehension of this power is not so easy as at first glance might appear. That the definition of the term itself is difficult, is shewn by the unsatisfactory definitions by eminent literary authorities which Dr. Brooke has adduced. It appears rather to be one of those terms, the meaning of which is more easily conceived than defined; like quicksilver, eluding the touch and refusing to be moulded, like a vulgar metal, into specific shape. Those definitions, indeed, which were placed before us as the least objectionable, have still a degree of indistinctness which leaves something for reflection to supply. The character of the individual, the importance of the subject, and the emergency, are no doubt requisite to pre-engage an audience; whilst truth, earnestness, clearness, and concentration, seem essential to the power of eloquence. This is, I think, a fair deduction from at least two striking but very opposite examples presented to us; that of the venerable but now forgotten member of the British Parliament who wrapped up in a short sentence, a force which hours of declamation could not have strengthened; and that of Edmund Burke, of immortal

memory, whose luminous prolixity was wont to produce weariness more readily than conviction. I shall, however, best consult my own credit if I do not trust myself further on this subject, but rather remind the Society that the interesting paper to which I have now recalled their attention, was closed by an intimation, that the author might at a future time supply what he had then omitted, and cite, amongst other examples, in illustration of his theme, some of the sententious eloquence characteristic of a late noble Duke. From this I gladly infer that Dr. Brooke has in reserve a portion of his Essay much too interesting and instructive to be postponed beyond such early day as may suit his pleasure and convenience.

At our last meeting the progressive improvements in the modern method of ascertaining longitudes by magnetic telegraph, were explained to us by Dr. Jack, in the same lucid manner, which on many former occasions and on other subjects, has conduced so materially to our pleasure and instruction. The observations of the learned Professor were illustrated by a model of the magnetic telegraph, and by several diagrams explanatory of the mode of observing the transit of the heavenly bodies, and of the co-incident notation of time and transmission of signals by the telegraph. Some of the results of the joint labours of Drs. Toldervy and Jack in this method of ascertaining longitudes, have already been before the Society, and there is every probability that they are exact to a degree which cannot be hoped for by the ordinary methods. In every improvement, however, in practical science, some imperfection in the first experiments is to be expected, and the present case was not an exception. It was first noticed, I believe, by Professor Bond, that the registration of time and the instant of the transit of any given star might be accomplished independently of the hand and the ear of the observer, by aid of certain mechanical arrangements in connection with the magnetic force and the movements of the astronomical clock. He succeeded in applying this idea, leaving, by successive improvements, scarcely any thing to be desired in the precision of the registration. The next step was to insure equal precision in the

observation, by affording to the undistracted attention of the observer, numerous bisections of the same star during its passage across the field of the instrument, thus progressively refining, as the learned Professor explained to us, in order to attain results more and more exact, or to still more minute fractions of a second of time. To those who may not have given some consideration to the subject, the importance of this refinement may not at the first glance be apparent; but it is readily understood when we apply it as a check upon extensive trigonometrical and other measurements on the ground, requiring the extreme care and precision of those appertaining to a great national undertaking, like the Coast Survey of the United States, now in progress. It is proportionally important in surveys of a smaller extent. Now we ordinarily regard a second of time as an exceedingly small space, the smallest indeed that we trouble ourselves to notice: but when we apply it to the lineal admeasurement of the earth's rotation, it is found to represent on a parallel at the equator an extent of 1521 feet nearly. This distance, of course, diminishes on every parallel successively towards either pole, proportionally to the sine of the co-latitude. In the latitude of Fredericton it represents 1077 feet nearly—that is to say, in an east and west direction; and a tenth of this, corresponding to one tenth of a second of time, would be about 108 feet. We therefore perceive that whilst we are refining in this method of ascertaining longitude, so as to be exact, with tolerable certainty, to one-tenth of a second in time, this means that we are still certain only within a range of 100 to 150 feet, lineal measurement, according to the latitude of the place. But in a properly conducted trigonometrical survey, an error no greater than this, in an extended system of triangles, would be inadmissible and perhaps exceedingly perplexing; and the value of the electro-magnetic method of ascertaining longitude would be in promptly detecting in what meridian of the system such an error had occurred. Prior to this method of ascertaining longitude, I feel justified in saying that the results of the ordinary methods are nearly valueless where a reliable check on the

relative position of remote points on the ground is important; except in these cases where unlimited pains aided by the best appliances, necessarily involving great expense, have been employed. It is, however, scarcely necessary to remark, that the telegraphic method of ascertaining longitudes can supersede other methods only within the limits of an established telegraphic system; and that on the ocean, or in uninhabited countries, or in those to which the telegraph has not yet reached, the ordinary methods must still be pursued.

I have now gone over the ground marked by the proceedings of the Society during the past year, and though we may not have wrought wonders, I trust our labours have not been without results to which we may recur with satisfaction. We have, on the whole, passed with success through eleven years probation, I trust in a manner not to require any of us to look back with regret at whatever share he may have taken in promoting that success. It has been sometimes said by individual members here, and those the least likely to have occasion to say so, that they had been lead by the obligations of our rules to reading and investigations on subjects connected with our proceedings, from which they had derived both pleasure and instruction, which otherwise they should probably never have enjoyed. I doubt not but that this satisfaction is more or less shared by each of us, and in my own case, I the more freely acknowledge it, because it is one of the proofs of our success. This was one of the objects proposed when the Society was founded; bu. I think I am right in saying that it was not intended to circumscribe our views of benefit to our own limited circle; but as the Society increased in numbers, in combined intelligence and constitutional vigour, it should if possible be more influential for good, and particularly with reference to the industrial interests of the Province; I am prompted to make this remark by the dark cloud of commercial depression which continues to hang over us. We are, I believe, unanimous in regarding our dependence mainly on one, and that an exceedingly hazardous branch of industry, as greatly to be deplored; and that without multiplied employments to create

regular markets, we must have a languishing agriculture, and precarious gleams of prosperity. To increase mere numbers by immigration could only add to our embarrassment; we have numbers already unemployed. I will not occupy the time of the Society with the details upon which I found my estimate, but I think I am safe in saying that there are within the municipality of Fredericton alone, a number of persons of various ages and of both sexes, not less than 500, who, though not absolutely unemployed, could, without detriment to any other employment, be transferred to new and profitable employments. Suppose that number of persons could, one with another, earn more than is now earned, only five shillings per week each, the year round, at some new branch of industry; this would add more than £6,000 to the income of the whole community, with the unfailing moral and social results which mark the difference between industry and comparative idleness.

If I am not greatly mistaken in this view, it is then of corresponding importance to us to invite and promote the immigration, not of mere numbers indiscriminately, but of skill and experience, with a due proportion of capital, in such arts and manufactures as are suited to our circumstances; and without which, during the stagnation of our almost solitary commercial resource, our agriculture must be without a market.

It is therefore, I conceive, of much importance to acquaint ourselves with the history and example of communities everywhere, which have signalized themselves by successfully enlisting in aid of their growth and prosperity, such of the industrial arts as may be applicable to our own situation.

We need not confine our view to mechanical and manufacturing arts only. It may be possible to cultivate certain crops with advantage, not only for domestic use, but for exportation; say for instance flax, hemp, or hops. The last is indeed indigenous to the soil, growing rank and neglected in the recesses of our unreclaimed alluvial lands. In England this crop is exceedingly precarious. In this country it might not be so; or it might be abundant when a failure in England.

The duty is indeed enormous, and in abundant years would preclude importation in England. But the article has the advantage of not being perishable, and could be stored for an indefinite period to await a remunerative market. All such matters are worthy of enquiry, and I think are legitimately within our recognition.

At the risk of a little tediousness I will mention another crop, of a less doubtful description, in the abundance and quality of which New Brunswick equals, if it do not exceed, any other country whatever; and what is more, this crop does not require either capital or immigrant labour for its cultivation; it is of spontaneous growth. To our reproach be it said however, like other blessings which are freely awarded to us in unlimited abundance, it is neglected, if not too often despised. We let the opportunity of gathering it pass away, and when we see it wasting and disappearing before our eyes, we rather rejoice at than regret the event. Neither the prudent, nor the economical, nor the philanthropic reflection disturbs our minds, that millions of our fellow-beings in distant climes will pine and languish for that which was thus in our power to supply. You all know that I allude to what our enterprizing neighbours call the "ice-crop."

This salutary product has been appreciated in eastern nations from unknown antiquity; and that it was so by one of the wisest of men has been thus perpetuated in the Book of Proverbs—"That as the cold of snow in the time of harvest, so is a faithful messenger to one that sends him; for he refreshes the soul of his master." The sale of ice and snow procured in the caves of Vesuvius and on the more elevated parts of Etna, is said to have long been a considerable branch of trade in Naples, Catania, and the adjoining Towns; and in all the south of Italy and in Sicily those articles are regarded as of prime necessity. It is not many years since the speculative genius of New England was directed to ice as an article of commerce, which that country could abundantly supply; and it has within a short period become a business of the first importance. The field of demand embraces besides the American Union,

the Spanish Main, the West Indies, South America, Europe, India and China, giving employment to a very large tonnage engaged in this trade, which is carried on from Boston, and supplied by a few small Lakes or Ponds in the State of Massachusetts. So great have been the improvements and increased facilities of the trade, that ice, which at its commencement cost 6 cents per lb. in New Orleans and Havannah, may now be had for one cent. In Calcutta a warehouse, enclosing about three quarters of an acre of ground, has been erected and fitted up to hold 30,000 tons of ice, and a similar depot has been projected in Canton. So long ago as 1841 there were no fewer than sixteen Companies engaged in the Boston ice-trade, which have since greatly increased. In the year 1848 the estimated export was 80,000 tons. The supply is principally from the Wenham Lake, and is conveyed by about 18 miles of railway to Boston.

Let us glance at our own position relative to this trade. A few days will carry off probably not less than a million of tons of pure ice from the immediate front and neighbourhood of the landings of the city of Fredericton, or twelve times the export, just mentioned, from Boston, and which was brought eighteen miles by railway. The quality of durability so important to ice, is in proportion to its purity and the temperature to which it has been subjected. The marketable value of our ice, would, in this respect, have an advantage of from 15 to 20 degrees in the intensity of cold as compared with that of Massachusetts, or even of the shores of our own Province. Sawdust, an essential material for packing, exists in and near Fredericton in abundance, to remove which would be a public benefit, and probably no loss to any individual.

I advert in a general way to these facts, to show how, even under present circumstances, it is possible that a place with the advantages of Fredericton, instead of being stagnant during the winter season, may be animated by at least one branch of industry, the raw material of which is prepared by nature to our hands. As to its profitable character, much must, of course, depend on the tact, intelligence, and good management

of such men of business as might engage in the trade. The risk would probably be too great for any individual in the first instance to undertake it alone, and the united means of a joint stock association might be advisable. But in either case it would perhaps be unprofitable for some time to come to compete in distant markets with merchants long established in the trade. A more feasible course, if even at first less profitable, might be to sell to those merchants. Assume, for illustration, that 50,000 tons were stored at Fredericton with a view to exportation. If valued at 10s. per ton, including all expenses and profit, delivered on board at Fredericton, it would make a trade of the value of £25,000. It is not unreasonable indeed to assume that by judicious arrangements we might pay for all the West India and other tropical produce we require, such as sugar, coffee, spices, rice, &c. by means of this trade alone. From all parts we hear that further westward the "ice-crop" is a failure. With us it is abundant, but unfortunately we are not in a condition to use the advantage. Like all other branches of trade this will be liable to irregularities of supply and demand, and to the evils of imprudent competition and speculation. These contingencies may even now exist as a temporary discouragement at the seat of its first great success. But it is certain, that without an entire change in the meteorological character of our planet, the ice-trade cannot cease to be one of much importance, especially with modern facilities of transportation; and it must tend to centre itself where quality, quantity, and the greatest local facilities invite it. The result must, as in other cases, depend, under Providence, on the intelligence and good management with which it is conducted.

I will not further weary you by extending these observations. If they may aid in assuring us that we occupy no repulsive or unpromising field, and that with due regard to the varied tastes and acquirements of our members, we need not lack subjects of cultivation worthy of our unabated interest, I shall feel less sensibly the imperfections of my own share in the duties of the year.

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