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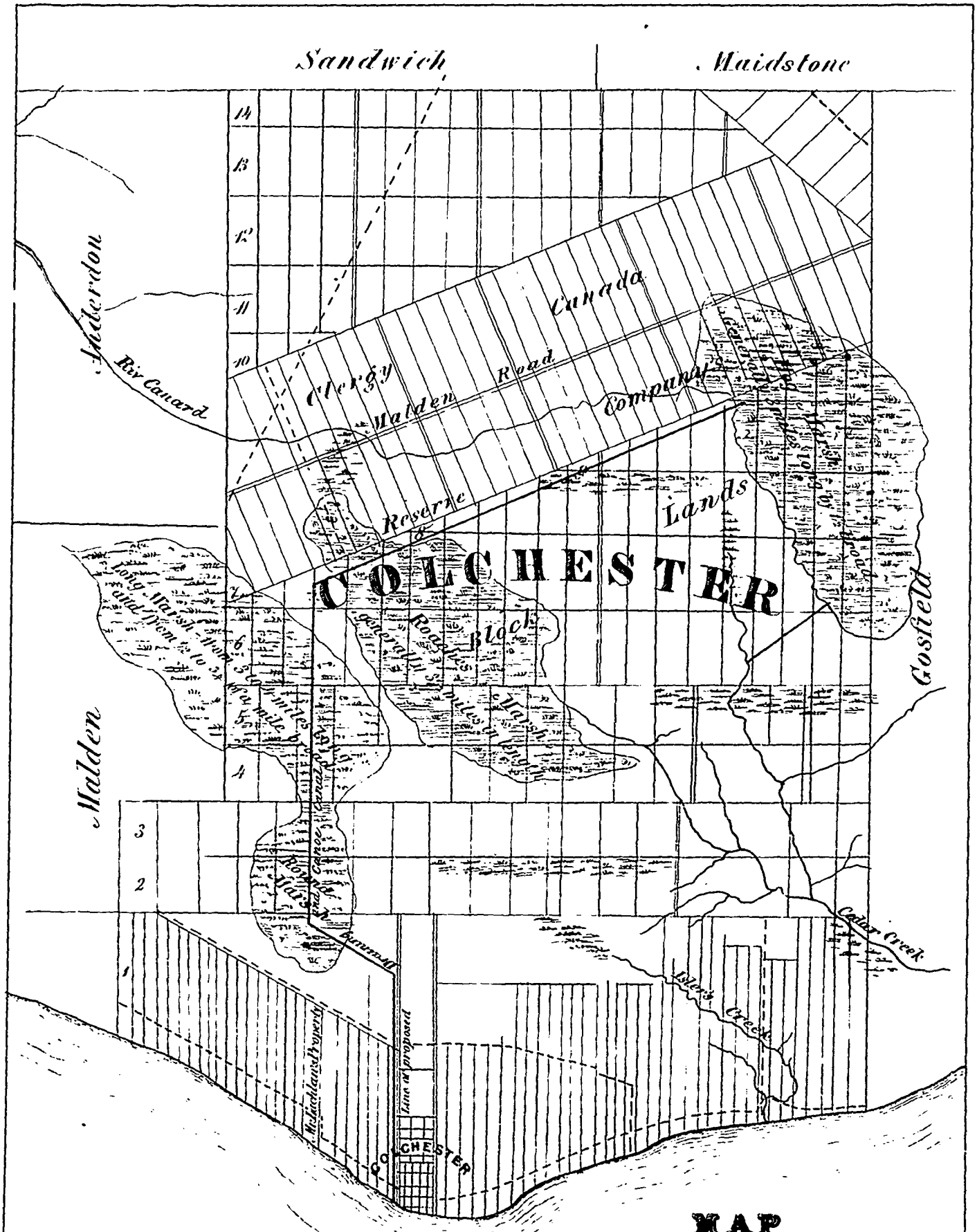

The thick lines shew the general direction of the Main Drains or Canoe Canals.

MAP
of the
TOWNSHIP of COLCHESTER
To Illustrate
MAJOR LACHLAN'S PAPER.
Page 321.

The Canadian Journal.

TORONTO, SEPTEMBER, 1855.

On the formation of a Canal between Lakes St. Clair and Erie,

And the foundation of a Town and Harbour at the Mouth of the Two Creeks, in the Township of Romney, in connection with the establishment of an extensive system of Drainage, by which near a Million of Fertile Acres would be redeemed in one District. With an illuciatory Map.

BY MAJOR R. LACHLAN, MONTREAL.

(*Concluded from page* 303.)

To the foregoing descriptive sketches of the localities for both undertakings, (*see August number of the "Canadian Journal," page* 306,) I might have added further desultory remarks demonstrative of the great benefits sure to result from their successful accomplishment, as affecting not alone the immediately surrounding country, but the whole district, and even the Province at large; but, contenting myself with what had been advanced by Mr. Elliott, and the writer in the *Patriot*, I merely observed that, taking it for granted that all the advantages expected from the opening of the proposed canal would be realized, the first questions that would be asked would be: what should be the express nature of the canal? and, what would be the most economical way of executing the work? To which I would unhesitatingly reply, that, of course, it ought to be a *ship canal;* but that that involved two considerations, namely, whether, as proposed by Mr. Elliott, it should be only a simple cut *without locks*, which with a fall of between five and six feet in fifteen miles might perhaps be practicable, or whether it should be furnished with at least one lock at its southern extremity for at once moderating the current, which at particular seasons would doubtless be very rapid, and furnishing the village with a valuable permanent water-power for milling purposes, in a part of the country where such privileges are much required. Without, however, pretending to have investigated the probable results of either plan very closely, I was content to observe that I inclined to the latter plan, although the most expensive, as calculated to keep the waters in the canal under subjection; whereas, were they left to chance, as an open cut, it was not improbable that the current would in the course of a very short time scoop out a channel of far greater magnitude than might be desirable. Add to which, though I did not altogether acquiesce in Mr. Elliott's expectations of its lowering the surface of Lake St. Clair to the extent predicted by him, it was impossible to say what effect the uncontrolled expansion of such an outlet would produce on the present level of that lake. The expense of the undertaking also I had not attempted to estimate; but, considering the trifling lockage required and the *supposed* absence of all rocky obstructions, one might hazard a supposition, from a known rate of £3,000 per mile for a canal thirty feet wide and eight feet deep, that the whole expense of excavation would not much exceed £40,000, a sum very far short of the value of the rich lands that would thereby be reclaimed from a state of utterly unproductive, and, at times, even pestilential marsh!

In taking this cursory view of the subject I had, of course, confined myself to the formation of *the canal* alone, as a navigable channel of communication between the two lakes. It now, however, became necessary to connect that branch of the undertaking with the proposed town and harbour at its southern termination. But, fortunately, that would involve very little additional expense; for, taking it for granted that the eligible character assigned to the *former* was correct, its rapid location by settlers would be sure to follow; and, therefore, the only obstacle to the successful formation of the *latter*, worth considering, would lie in the removal of the bar or sand-bank liable to form at the mouth of the creek. And even that need not detain us for a moment; for if such obstructions can be obviated elsewhere, and, as already mentioned, could here be so easily overcome in the course of a single night by scooping out a trifling channel with the hands, by way of amusement, what might not be expected to be accomplished by the permanent action of the current of the canal, guided between Piers at its exit into the lake!

Having thus supplied—what had been omitted by the Municipal Council—such data as I thought might reasonably justify the Government in authorising the Board of Works to undertake at least *a preliminary survey*, I refrained from saying more on *that* subject. But I could not help adding that being impressed with a conviction that very great public benefits would be derived from a scientific examination of the levels of *all the lake-shore Townships*, with a view to the institution of a regular sytem of Public Drainage, and the redemption thereby of hundreds of thousands, if not a million of acres of the richest land; and being of opinion that in a young and rising country like Canada, the general economy of harbours, bridges, and, though last, not least, *Public Drainage*, should be under the sole control of Government,* I trusted that I should not be deemed presumptuous, should I hereafter be led to draw the attention of the Government to that important subject, particularly as I was prepared to prove that in my own Township alone the application of a trifling sum in drainage would at once convert not less than 6,000 acres of the finest land from a state of waste marsh into smiling farms; and that, to my certain knowledge such was more or less the case in the whole of the other lake-shore Townships.†

* Such is the case with the harbours in the United States, without any reference to profit or otherwise, even to furnishing the funds from the *Federal* purse; and, I believe that some years ago Mr. Killaly also expressed a similar opinion, at the very time that, strange to say, the Rondeau was being abandoned by the Government to a private Company, because found to be unproductive. Whereas, had the Government been in the first instance content to construct a mere harbour of refuge, with a light-house at its mouth, and left the rest to futurity, they would have accomplished all that was wanted in such a situation, at half the expense incurred.

† In justice to the important public objects advocated, I now feel constrained to state, with all candor, that I was in due time honoured with an acknowledgement of the communication from which the foregoing details are extracted, conveying the Governor-General's thanks for my suggestions, and apprising me that the subject had been submitted to the Commissioner of the Board of Works; but that, unfortunately, that officer had expressed a very unfavourable, though *unofficial*, opinion respecting the Canal, which was transmitted for my information. *Conceiving such a mode of* proceding to be premature—the sole object of the Municipal Council and myself being to obtain a *preliminary* survey, on which to establish further action or rejection—and the Canal alone being alluded to by the Commissioner, and some of my language even on that head appearing to have been inadvertently misunderstood, as well as misquoted, I felt bound to offer some further explanation, in the hope of so far setting matters right; as I should have regretted exceedingly that any blunders on my part respecting the Canal, should stand in the way of either the proposed Town and Harbour, or the drainage of so large a tract of valuable country. I accordingly lost no time in referring to the fact that instead of profess-

Such being the unsatisfactory termination of my long-continued, and sometimes expensive, disinterested exertions, it will not be thought surprising that I should have felt so chagrined and disappointed that I had ever since refrained from further agitation of the subject. But more propitious times appearing to have at length arrived, I *now* venture to add to the foregoing narrative even the following rather lengthy particulars on the subject of *Drainage*, extracted chiefly from a Topographical Sketch of the Township of Colchester, drawn up by myself, as of sufficient public interest to repay the perusal.

"The surface of this Township, though partaking of the general flat character of the District, is far from being a dead level, being in many quarters enlivened by large tracts of undulating or rolling land, and in others checkered by detached stony rises, besides being traversed by a rather continuous ridge running irregularly in a west and east direction, two or three miles retired from the lake, which, forming a barrier to the drainage of the interior lakeward, forces a portion of the surface waters westward into the River Canard, and the rest south-eastward by several channels into Cedar Creek.*

"The existence of similar ridges is a distinguishing feature in nearly all the other lake-shore Townships; in some of which, as in Raleigh, they approach to within half a mile of the beach, and not only arrest the drainage of the back lands towards the lake, but produce a succession of open marshy tracts, which become nearly dry in summer, but are annually flooded until they attain a certain height, when their waters find a partial vent by various outlets, from pools or ponds, which appear to have at one time been of a lower level, and (in this Township at least) to have owed their present elevation to artificial dams, formed by that sagacious amphibious animal, the beaver, once very common, but now rarely met with in this part of the country.† The ridges alluded to are also remarkable for being in some instances composed of beds of small gravel and sand, mixed with isolated masses of rock; and in others of a congeries of large imbedded boulders of granite, limestone, and other rocks, some of which measure from ten to fifteen feet in surface.

"The marshes in Colchester, explored by myself, are four in number, and known by different names, such as Hog Marsh, Roach's Marsh, Long Marsh, and Round Marsh. Of these Hog Marsh, which is partly in Gosfield, occupies about 1,200 acres, and is generally about three miles and a half long, and one and a half broad, and is remarkable as at the same time draining westerly, and giving birth to the little River Canard, which falls into the Detroit above Amherstburg, and also S. S. Eastwardly into Cedar Creek, which empties itself into Lake Erie. Roach's marsh, which lies further west, and also feeds the Canard on one hand and Cedar Creek on the other, contains about 2,000 acres, and is generally about three miles and a half long. Long Marsh, still further west, contains about 1,600 acres, and varies in length from three to four miles, and in breadth from a quarter to three-quarters of a mile. And Round Marsh, connected with the southern extremity of Long Marsh, consists of about 600 acres: making 5,400, or say 6,000 acres in all—a rather large proportion of one Township; exhibiting in the wet and winter months extensive sheets of solitary water or ice; but, as they gradually dry up during summer, assuming the more cheerful aspect of broad verdant prairies, hemmed in by dark forests, resorted to alike by roving wild deer and domestic cattle from the neighbouring farms, and in autumn furnishing an abundant supply of coarse hay to whoever may be disposed to cut and stack it. Though thus not altogether worthless, it would, of course, be far more desirable to have these rich flats subjected to the plough; and there seems to be no great difficulty in the way; for it is believed, from a rather careful, though *not* scientific examination of their levels, that being in general shallow, and the intervening ridges only a few feet in height, they might all be drained and converted into productive farms at little expense, by simply cutting a rather broad ditch due north from Lake Erie, past the village of Colchester to the ninth Concession, until it approaches the River Canard, that would at once serve the purpose of a small Canoe Canal, and, by throwing the excavated materials all on one side, furnish a good elevated road through a part of the country in which, in wet seasons, such a communication is much wanted. Add to which the same cut might perhaps be made to supply a considerable water power, for the benefit of the village."

In further proof that the proposed drainage of the lake-shore Townships in general, and of Colchester in particular, was not altogether a visionary scheme, it may be here added, commencing with my own Township, that after estimating as well as I could the difference of the level inland, I became persuaded that a depth of three or four feet, and a width of six past the village, would be sufficient, and that the greater additional cutting required through the first ridge, about one mile and a half inland, need not in any part be more than six feet, and that the expense, therefore, would not be very great, while the benefits arising from such a measure would be incalculable.

Impressed with this conviction, and all the other Townships partaking more or less of the same physical character, I had, in 1841, been encouraged to open the subject to Lord Sydenham, during a personal interview at Kingston, in the course of which I remarked that as in Colchester the great bulk of the lands to be drained belonged to the Clergy Reserves and the Canada Company's block, the principal part of the expense would have to be borne by them, but that an equitable assessment per acre might also be levied on the lands of private individuals who benefited by the drainage: an arrangement in which his Lordship acquiesced, in addition to evincing his general approbation of the project, by particularly requesting me to mention the matter to the then Surveyor General and Commissioner of Crown Lands. I had, however, only an opportunity of seeing the former, when he also seemed to take much interest in the proposal, though he confessed that he saw little prospect of being then able to bring it forward with success. I was, therefore, induced to postpone all further agitation of the subject till I should have an interview with the Commissioner of the Canada Company; and this I had at Toronto on my way homewards, when Mr. Widder assured me that he approved much of the scheme, and that if I could only get Governm en

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ing to have attempted any detailed estimate, I had pointedly avowed having refrained from so doing, and had merely hinted that, *in the absence of all such*, one might *hazard a supposition* (from a cursory comparison of several American estimates, from which I quoted a few figured details) that the expense of the proposed Cut between Lakes St. Clair and Erie, would not much exceed £40,000, and that, being no professed Engineer, any misunderstanding on my part was excusable; and that I, therefore, trusted that Government would still be disposed to authorise the trifling expense required to carry out even the most elaborate preliminary survey, from the results of which the Board would then be enabled to ground an authoritative opinion. Nothing further, however, was ever heard on the subject.

* See the Township of Colchester in the annexed map, in which the marshy tracts are pretty correctly delineated.

† It was proposed that wherever these elevated ponds or basins occurred the dams should be cut through, so as to allow the water to flow off into the main drain or other outlet

to move in the matter I might depend on the Canada Company not being backward in contributing their full share towards the success of the undertaking; but there the matter rested.

With respect to my remaining notes on drainage, as the object aimed at referred chiefly to the lake-shore Townships, I shall here pass over those of Sandwich and Malden, as well as those lying along Lake St. Clair, though the public lands in all of them would be much benefited thereby.

With regard to Colchester, as already observed, I proposed the main drain to be of a width and depth sufficient to be used as a canoe Canal for bringing small supplies from the back settlements, at times when the roads are impassable, and to run straight north from the lake, past the west boundary of the village, into the Round Marsh, and from thence through the 2nd, 3rd, 4th, and 5th Concessions, until it struck upon the borders of Long Marsh, and from thence through the 6th, 7th, and 8th Concessions, and across Roach's Marsh, until it approached the River Canard, near the Malden Road, receiving right and left a few small cross branches at the different Concession roads, and thus draining a great extent of scattered low land, in addition to the main inundated tracts of Round, Long, and Roach's Marshes. It was also proposed that another cut should commence from the south-east end of Roach's Marsh to Cedar Creek, with cross ditches at the division roads of the different Concessions; while a third might be made to lead from Hog Marsh (in which the River Canard takes its rise) into the branch of Cedar Creek called Banks's Creek, so as to drain a great portion of the west half of Gosfield.

Regarding Gosfield generally my positive information is rather limited, but it is well understood that though most of it is high and dry, great benefit would be derived from judicious drainage in many parts of it.

With respect to Mersea, which is the next Township, I learnt that there is also much wet land in it; and that the front portion drains towards Lake Erie by numerous creeks, of which Sturgeon Creek is the principal, into the long marshy projecting tongue of low land called Point Pelé; but I never had a good opportunity of thoroughly examining this Township, though desirous of doing so, with the view of ascertaining whether a harbour of refuge could not be established at the mouth of Sturgeon Creek.

To the east of Mersea lies the Township of Romney, in which it is proposed to establish the much desired town and harbour, and of which, therefore, it is unnecessary to take further notice here.

The next Township, with the exception of a small triangular portion of Tilbury, is Raleigh, the northern half of which, from the 12th Concession, drains north by a labyrinth of creeks into the Thames, parallel with which also there is a long marshy track at about one and a half mile distance; while the drainage of the southern portion becoming interrupted by a gravelly ridge, in some parts not more than half a mile from Lake Erie, escapes by many springs through a sandy substratum, which frequently produces along the undermined lofty bank of the Lake extensive land slips of a very singular and even picturesque appearance, the subsidence often taking place in a succession of steppes or stages, leaving the trees and shrubs growing undisturbed. Here, it may be observed, the banks of the Lake are in some parts 70 and 80 feet high.

A similar character prevails in the next Township of Harwich, with the exception that the southern portion slopes towards the low marshy track north of the Roudeau, and that remarkable projecting point of low land called Point aux Pins, while the northern surface waters search their way by a variety of outlets, into a branch of the Thames called McGregor's Creek.*

The northern half of the fine Township of Howard, which is the next, going eastward, also drains north into McGregor's Creek, while the southern portion slopes towards Lake Erie, and finds a vent for the greater part of its surplus waters through different branches of a creek, which, after passing Morpeth, discharges into the Lake near Antrim,—a position where another harbour might, perhaps, be established.

Of the remaining Township of Oxford, I have ascertained little, except that, like the next, it would be much improved by drainage.

To the above details, all that now remains to be added, in conclusion, is, that having with all deference placed the whole question unreservedly before the Institute, in a simple *narrative* form, I am perfectly willing to abide by their decision as to its merits; and that I would, therefore, fain hope that some of our scientific members will ere long be disposed to come to the aid of a patriotic object of great prospective importance and value. In the meantime I remain content with having once more led the way in a good cause,—willing either to support further my own humble opinions hereafter, if necessary, or to bow to the decision of better informed professional men. There is, however, one collateral subject on which I would, in concluding, wish to add a few words:—namely, that as I have on the one hand alluded to Canada's discreditable abandonment of the honor of being the originator of the Sault Ste Marie Canal, and on the other to the many signal improvements in the navigation of the River St. Lawrence, either already completed or in progress, exemplified in the erection of numerous lighthouses, the formation of splendid Canals, the deepening and buoying off of shallow channels, and the blasting of dangerous rocky impediments in the various rapids, I would also fain hope that there can be no petty political obstacle in the way of a friendly co-operation with the State of Michigan, by which the embarrassing "flats" or clay banks in the River St. Clair, and a few of the shallow channels through Lake St. Clair, such as the North, Eagle, and Walpole Island channels, may be kept thoroughly open and bouyed off, and one or two powerful Steam-tugs employed for towing up sailing vessels during adverse winds and calms, and thereby leave our unrivalled chain of inland waters without a single impediment, from Lake Superior to the Ocean! Nor will it be wondered that I should so pointedly advert to so desirable an international arrangement, when it is considered that more than 350 vessels are employed in the carrying trade of the upper lakes, of which about 50 are paddle steamers and propellers, and the rest sailing craft of various burthen, from the stately three-master to the humble sloop, and that a committee appointed by the Buffalo board of trade to enquire into the amount of losses sustained by owners of vessels detained on the St. Clair Flats alone during the past year, estimated the sum paid for detention, and damage incurred by collision while detained, at between £80,000 and £90,000, besides other expenses for lighterage, towage, &c., swelling the total annual amount to above £160,000!

* For a detailed notice of the Roudeau, see the note at the foot of p. 306.

Coleoptera Collected in Canada.*

By William Couper, Toronto.

For Authorities and Synonyms, see Melsheimer's Catalogue, &c.

CICINDELA

HIRTICOLLIS Say; *albohirta* Dej.; *unita* Kollar.

Jaws black at the points, lip white, with a front marginal row of punctures; antennæ: half their length are of a coppery polish, the points blackish and villous; eyes black; head, thorax, and region of scutellum bronzed, intermixed with a bright green colour, and covered with white hair; elytra of an earthy colour, polished, densely and minutely punctured, with a white spot on the shoulder angles, and a white rim at the apex; body beneath and legs coppery green, and covered with white hairs. Toronto peninsula and Humber bay, not common. Length 5 lines.

Taken by Richardson on the borders of the Mackenzie River, lat. 59°—62° N.

CYCHRUS

VIDUUS Dej.; *unicolor* Say. Newm. (Irichroa) Ent.

Palpi 4, claviform at the apex; antennæ 11-articulate—the basal joint longest: 2d, 3d, and 4th short, black, and polished; 5th to the apex brown pubescent; jaws elongate and toothed; head black and incline downwards; thorax margined—with longitudinal groove through the disc, and two depressions behind, reflecting a steel-blue colour, and densely punctured; elytra polished, with a punctured bluish margin—longitudinally punctured in rows, which become more irregular and rugose near the posterior. The elytra are greatly rounded posteriorly, and do not terminate in a direct point; body beneath black. Toronto, 7th April, under leaves; not common. Length 5 lines.

HISTER

BIMACULATUS Lin.; *obliquus* Say; *reniformis* Jardine's Nat. Lib., vol. vi. pl. 9, fig. 5.

Antennæ deflexed in the centre—the base forms an angle with the apex, which is knobbed; head and thorax black, the latter smooth and polished; elytra longitudinally striate, truncate behind, with a red spot at the extremity of each; abdomen and body beneath black; legs black—tibiæ minutely toothed on the outside; body depressed. Length 2 lines.

One specimen of the above was taken in Toronto in May last, which corresponds with Jardine's figure in the work above cited; but the length of the specimen from which the icon was taken is omitted. "Reniformis" may be synonymous with the European "bimaculatus," which also occurs in America.

ATTELABUS

ANALIS.—*Mels. Cat.*; *similis* Kirby.

Antennæ bluish black; head steel-blue—nearly cylindrical; middle part of the breast steel-blue; thorax dull red; elytra dull red, nearly square, and finely punctured in longitudinal rows; abdomen dull red; legs steel-blue. Toronto; June, on oak leaves, rare. Length 2 lines.

PHYSOCNEMUM

BREVILINEUM Say (Callid). Jour. Acad 3, 413.

Antennæ, head, and thorax black, the latter slightly tuberculate on the top of each side—narrow behind; elytra blackish in front—slightly bronzed behind, and of equal width throughout, with two longitudinal marginal lines on each. Legs blackish, the femoræ clavate. Toronto, not common. Length 5 lin.

* See pages 210 and 256 of this *Journal*.

CLYTUS

RURICOLA.—*Mels. Cat.* Antennæ short, and of a rust colour; head and thorax black, the latter globular, and surrounded by a yellow margin; scutellum yellow; elytra blackish, and from the region of scutellum a short yellow fascia points obliquely towards the lateral margin, and behind the latter fascia there is a zigzag yellow band, having a similarity to the letter W, as in clytus *speciosus*. Posteriorly there is a yellow transverse arch; tibiæ and upper section of femoræ of a rusty colour—the latter clavate; posterior legs the longest; pectus spotted with yellow; rings of abdomen yellow. Common throughout the Province. Length 5 lines.

CAMPESTRIS Oliv.; Lec. *terminans* Fabr. 2, 27.

Antennæ rusty-red; eyes black, with a yellow spot on the top of each; thorax globular, slightly hirsute, and sprinkled with yellow hairs in front, with a broad transverse band of grayish hairs behind, and a yellow spot on each side of the posterior section of pectus; femoræ clavate, posterior legs longest. Toronto, not common. Length 6 lines.

HELIOMANES

BIMACULATUS Say; *affinis* Le Conte.

Antennæ longer than the body; head and thorax black, the latter round, and sprinkled with short whitish hairs; elytra greatly abbreviated, covering but half the body, and spread apart behind; femoræ clavate.

From the transparency of the elytra, the folded wings can be seen beneath, which may have led Mr. Say to name it "bimaculatus." Toronto, common on Wild Parsnip. Length 2 lines.

MONOHAMMUS

DENTATOR Fabr. (Lamia) El. 2, 294.

Head and antennæ grey-brown, the latter in ♀ about half the length of those in ♂; thorax grey-brown, spotted with black, having a short spine on each side; scutellum small and whitish; elytra grey-brown, covered with small white and black spots—some of the latter are square, and arranged longitudinally; the apex rounded and covering the abdomen; body beneath and legs grey-brown. Toronto, not common. Length 9 lines.

STRANGALIA

SUBFASCIATA.—*Mels. Cat.*; *armata* Haldeman.

Antennæ 10-articulate: from base to 4th joint black, and six are ringed with yellow; head and thorax black, the latter narrow in front; elytra black, tapering behind, with a yellow spot on each shoulder, which widen on both sides of the scutellum, and from the lateral margin, each of which curve towards the suture; the right shoulder spot resembles a comma. On the centre of each elytron is a yellow tooth-like spot. Upper section of femoræ yellow; body beneath blackish. Toronto, rare. Length 5 lines.

PRIOGNATHUS

MONILICORNIS Randall (Ditylus) Bost. Jour. Lec. Agass. Lac. Sup.

Colour dark chestnut; antennæ moniliform, thicker at the apex; head bent down, smooth on top, with a transverse ridge underneath; thorax rounder than in *C. discicollis*. Elytra smooth, margined, and finely punctured. Owen Sound, not common. Length 3½ lines.

CRYMODES

(?) DISCICOLLIS Lec. Agass. Lac. Sup. p. 233.

Palpi 2-moniliform; antennæ moniliform, thicker towards the apex; head bent down in front, densely and finely punc-

tured; thorax finely punctured, and slightly depressed on top, with a swelling on each side in front—narrow posteriorly; elytra finely punctured, and of a dark chestnut colour, with slight longitudinal elevations, which are more prominent behind. Toronto, rare. Length 8 lines.

Canadian Coleoptera

IN THE COLLECTION OF FRED. H. IBBETSON,

ASSISTANT COMMISSARY GENERAL, MONTREAL.

This collection was made in two summers. It contains about 780 species (including varieties), of which the following have been determined. They are arranged according to Melsheimer's Catalogue :—

CICINDELA

SEXGUTTATA—*Fabr.* Canada East and West. Common.
PURPUREA—*Oliv.* Toronto, Manitoulin. "
12-GUTTATA—*Dej.* Canada East and West. "
VULGARIS—*Say.* " "
REPANDA—*Dej.* " "
PUNCTULATA—*Oliv.* Toronto. Not common.

CASNONIA

PENSYLVANICA—*Linn.* Peninsula, Toronto. Rare.

GALERITA

JANUS—*Fabr.* Toronto. Mr. Couper. Rare.

BRACHINUS

VIRIDIPENNIS—*Dej.* Canada E. and W. Common.
CORDICOLLIS—*Ibid.* " "

CALOSOMA

CALIDUM—*Fabr.* Canada E. and W. Common.
FRIGIDUM—*Kirby.* Toronto. Mr. Couper.
SCRUTATOR—*Fabr.* " Messrs. Croft and Couper.

OMOPHRON

AMERICANUS—*Dej.* Canada E. and W. Common.

ELAPHRUS

RUSCARIUS—*Say.* Canada E. and W. Common.

CHLÆNIUS

SERICEUS—*Fost.* Canada E. and W. Common.
TRICOLOR—*Dej.* " "

CALATHUS

RUFICOLLIS—*Dej.* Toronto. Very rare.

ANCHOMENUS

EXTENSICOLLIS—*Say.* Toronto, Manitoulin. Common.

AGONUM

CUPRIPENNE—*Dej.* Canada E. and W. Common.
8-PUNCTATUM—*Fabr.* Toronto. "

ANISODACTYLUS

ELLIPTICUS—*Le Conte.* Canada E. and W. Common.

OCHTHEDROMUS

AMERICANUS—*Dej.* Toronto, Manitoulin.
TRANSVERSALIS—*Ibid.* "

NECROPHORUS

HALLII—*Kirby.* Canada W. Not uncommon.
VETUTINUS—*Fabr.* Canada E. and W. Common.

NECRODES

SURINAMENSIS—*Fabr.* Canada E. and W. Common.

OICEOPTOMA

MARGINATA—*Fabr.* Canada E. and W. Common.

THANATOPHILUS

CAUDATUS—*Say.* Canada E. and W. Common.

NECROPHILA

TERMINATA—*Kirby.* Canada W. Uncommon.

SILPHA

INÆQUALIS—*Fabr.* Canada E. and W. Common.

CATOGENUS

RUFUS—*Fabr.* Canada E. and W. Common.

DERMESTES

LARDARIUS—*Linn.* Everywhere. Common.

ONTHOPHAGUS

HECATE—*Pz. Fn. Am. Bor.* Canada E. and W. Common.

LUCANUS

DAMA—*Thumb.* Niagara. Common.

PASSALUS

(?) CORNUTUS—*Fabr.* Niagara. Common.

DORCUS

(?) PARALLELUS—*Say.* Canada E. and W. Common.

PELIDNOTA

PUNCTATA—*Linn.* Niagara. Common.

AREODA

LANIGERA—*Linn.* Messrs. Croft and Couper.

OTALOPLIA

SERICEA—*Illy.* Toronto. Common.

SERICA

VESPERTINA—*Schönh.* Toronto. Common.

OSMODERMA

EREMICOLA—*Knoch.* Manitoulin. Not common.
SCABER—*Beauv.* Canada E. and W. Common.

TRICHIUS

ROTUNDICOLLIS—*Kirby.* Canada E. and W. Common.

CETONIA

FULGIDA—*Fabr.* Toronto. Mr. Croft.

STENURUS

DIVARICATA—*Say.* Canada E. and W. Common.
(?) LURIDA—*Linn.* " Not uncommon.

CHALCOPHORA

VIRGINICA—*Drury.* Toronto. Mr. Couper.

CHRYSOBOTHRIS

DENTIPES—*Germ.* Canada E. and W. Common.

TRACHYPTERIS

FULVOGUTTATA—*Harris.* Toronto. Rare.

HEMICREPIDIUS

MEMNONIUS—*Hbst.* Toronto. Very common.

ALAUS

OCCULATUS—*Linn.* Canada E. and W. Common.

ELATER

LUGUBRIS—*Germ.* Canada E. and W. Common.
APICATUS—*Say.* Toronto. Mr. Couper.

CRYPTOPHYPNUS

DORSALIS—*Say.* Toronto. Common.
SILACEIPES—*Germ.*

LUDIUS

ABRUPTUS—*Say.* Manitoulin. Rare.

THANEROCLERUS

SANGUINEUS—*Say.* Canada E. and W. Not uncommon.

NECROBEIA

(?) VIOLACEUS—*F.* Canada E. and W., old bones. Com.

HYLURGUS

TEREBRANS—*Oliv.* Toronto. Common.
DENTATUS—*Say.* " "

ARRHENODES

SEPTENTRIONIS—*Hbst.* Toronto. Common.

PARANDRA

(?) BRUNNEA—*Fabr.* Canada E. and W. Common.

ORTHOSOMA

UNICOLOR—*Drury.* Canada E. and W. Common.

CHION?

(?) GARGANICUM—*Fabr.* Toronto. Very rare.

CRIOCEPHALUS

AGRESTIS—*Kirby.* Canada E. and W. Common.

CALLIDIUM

ANTENNATUM—*Newm.* Canada E. and W. Common.
VIOLACEUM—*Linn.* Montreal. Rare.

CLYTUS

* NOBILIS—*Harris.* Manitoulin. Rare.
SPECIOSUS—*Say.* Montreal. Not common.
FLEXUOSUS—*Fabr.* " "
ERYTHROCEPHALUS—*Oliv.* Canada E. and W. Common.

EUDERCES

PICIPES—*Fabr.* Toronto. Not uncommon.

GRAPHISURUS

(?) PUSILLUS—*Kirby.* Canada E. and W. Common.

MONOHAMMUS

TITILLATOR—*Fabr.* Canada E. and W. Common.
SCUTELLATUS—*Say.* " "

TETRAOPES

(?) TORNATOR—*Fabr.* Toronto. Mr. Couper.

COMPOSIDEA

TRIDENTATA—*Oliv.* Canada E. and W. Common.

SAPERDA

VESTITA—*Say.* Canada E. and W. Common.
PUNCTICOLLIS—*Ibid.* Montreal. Very rare.

OBEREA

3-PUNCTATA—*Fabr.* Canada W. Common.

DESMOCERUS

CYANEUS—*Fabr.* Toronto. Mr. Croft.

[illegible]GIUM

LINEATUM—*Oliv.* [illegible]treal. Rare.

STRANGALIA

QUAGGA—*Germ.* Canada E. and W. Not plentiful.
FUGAX—*Fabr.* Toronto. Rare.

LEPTURA

SCALARIS—*Say.* Manitoulin. Rare.
CANADENSIS—*Oliv.* Canada E. and W. Common.
RUBRICA—*Say.* Manitoulin. Rare.

TRIGONARTHRIS

PROXIMA—*Say.* Manitoulin. Common.

LEMA

TRILINEATA—*Oliv.* Toronto. Common.

COPTOCYCLA.

A *new* species, not yet described or named.

GRAPTODERA

CHALYBEA—*Illig.* Canada E. and W. Common.

LABIDOMERA

3-MASCULATA—*Fabr.* Canada E. and W. Common.

CALLIGRAPHA

SCALARIS—*Le Conte.* Canada E. and W. Common.

GASTROPHYSA

CÆRULEIPENNIS—*Say.* Everywhere. Common.

CHRYSOCHUS

AURATUS—*Fabr.* Sault Ste. Marie. Not very common.

HIPPODAMIA

13-PUNCTATA—*Linn.* Canada E. and W. Common.
5-SIGNATA—*Kirby.* Canada W. "
PARENTHESIS—*Say.* Canada E. and W. "

COCCINELLA

BIPUNCTATA—*Linn.* Canada E. and W. Common.
12-MACULATA—*Gebler.* " "
TRANSVERSOGUTTATA—*Fald.* " "
9-NOTATA—*Herbst.* " "
SANGUINEA—*Linn.* " "

MYSIA

15-PUNCTATA—*Oliv.* Canada E. and W. Common.

EXOCHOMUS

(?) 4-PUNCTATA—*Motsch.* Montreal. Very rare.

TENEBRIO

MOLITOR—*Linn.* Canada E. and W. Common.

UPIS

CERAMBOIDES—*Linn.* Canada E. & W. Not uncommon.

BOLITOPHAGUS

CORNUTUS—*Pz.* Canada West. Common.

MELANDRYA

STRIATA—*Dej.* Canada E. and W. Common.

EPICAUTA

ATRATA—*Fabr.* Canada West. Common.

DENDROIDES

(?) CANADENSIS—*Latr.* Toronto. Male rare.

NOTOXUS

MONODON—*Hentz.* Canada E. and W. Common.

BOLITOBIUS

CINCTUS—*Giv. Micr.* Manitoulin. Rare.

STAPHYLINUS

VULPINUS—*Erich.* Canada E. and W. Common.
VILLOSUS—*Giv. Micr.* " "
CINGULATUS—*Grv. Micr.* Toronto. Not common.

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* Le Conte has informed me that my specimen is marked differently to any he has seen.

(?) CHRYSOCEPHALUS—Toronto. Very rare.
EXULANS—*Erich.* Toronto. Mr. Couper.

CRYPTOBIUM

BICOLOR—*Grv. Micr.* Toronto. Not common.

PHLÆDERUS

LITTORARIUS—*Grv. Mon.* Canada E. and W. Rare.

NOTES ON MR. COUPER'S DESCRIPTIONS,
Published at page 210 :

CICINDELA PURPUREA—I found more than common.
" PUNCTULATA—May be found pretty plentifully on the sandy road near Toronto Cemetery, about the middle of August.
AGONUM CUPRIPENNE—Larger than A. 8-*punctatum.*
" 8-PUNCTATUM—Common in damp situations.
OSMODERMA—I have found the O. *eremicola* always after sunset, but the O. *scaber* invariably in the day-time, and generally flying. Of the latter, those of Canada West greatly exceed in size those of Canada East.

NOTES ON PROF. CROFT'S ADDENDA.

CLYTUS ERYTHROCEPHALUS—Very common.
STRANGALIA FUGAX—Not uncommon.
CALLIDIUM *atennatum—antennatum ?*
LEPTURA CANADENSIS and PROXIMA—Not uncommon.

Reviews.

TRANSACTIONS OF THE LITERARY AND HISTORICAL SOCIETY OF QUEBEC, Part 3d, Vol. IV. :

1. *On the Twenty Years' Siege of Candia, by E. T. Fletcher, Esq.*
2. *Notes on the Resources and Capabilities of the Island of Anticosti, by A. R. Roche, Esq.*
3. *On the Water Power of Quebec ; and*
4. *On a Plan of the Construction of a Raft to Rescue Passengers from Sinking Ships, by Lieut. D. Ashe, R.N., F.R.A.S.*
5. *On the Mean Results of Meteorological Observations at Quebec, during the Winter of* 1853-54, *by Lieut. Noble, R.E.*

We hail with much satisfaction the appearance of the valuable little book, of which the foregoing heading gives the title and contents, as pleasing evidence of the continued, sure, though slow progress of a sister Association, in whose success the Canadian Institute must ever naturally take a lively interest; and we trust it will not be long before we shall have to welcome a fourth part, at least, to complete the Volume.

In characterizing the progress of the Historical Society as slow, we hope we shall be acquitted of any unkindly feeling, or desire to detract from its merits; but when it is recollected that the first part of the same volume dates so far back as 1843, and the second did not appear till 1854, we think we shall be borne out in our observations,—particularly after the rather *unfriendly comparison*, lately made in a leading Quebec Journal, between its own local Association and the Canadian Institute. ur present object, however, is not to discuss the relative merits of either society, but to examine and comment on the contents of the welcome publication now before us.*

Of the first article, then, let us frankly observe that, however interesting the subject may prove to many, as a long bygone historical episode, perhaps a topic more apropos to the onward course of young *Canada* might have been selected by its writer; but we willingly acknowledge having perused his pleasing narrative of the truly remarkable twenty years' siege of Candia, with considerable interest. Passing over, for the present, the valuable and timely Paper on the Island of Anticosti, we rejoice, even as *Torontonians*, to notice such, though minor, local articles as that of Lieut. Ashe on the Water Power of Quebec; and sincerely trust that the very commendable exertions of the citizens of "the Ancient Capital" to obtain an unfailing supply of so essential an element as pure water, have been crowned with triumphant results; and no one can help joining in the philanthropic desire that the ingenious plan proposed by the same intelligent writer, for the construction of a Raft for rescuing passengers from sinking vessels, may speedily be brought into successful practice. Of the valuable contributions of Lieut. Noble to the department of Meteorology, nothing need be said in this *Journal*, whose pages have so frequently been indebted to the same scientific observer.

We are now, therefore, left at liberty to retrace our steps, for the purpose of not only re-avowing our high estimation of

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* It may be proper to notice that the article alluded to, was the Editorial in the *Quebec Chronicle* of the 5th instant,—very naturally lauding highly its own local Society, but unnecessarily doing so at the expense of the Toronto Institute. The part to which we object is as follows :—"Comparisons have more than once been made between the L. and H. S. of Quebec, and the Institute of Toronto, to the detriment of the former. This, to say the least of it, is unjust, for if any one will take the trouble of looking into the publications of the two Societies, he will perceive that the articles of the Q. S., are *original*, and that those of the Toronto Institute, with very few exceptions, are copied from other works. Now, if the aim of such bodies be to give an impulse to studies, to develope abilities, as well as disseminate knowledge, our Society with less pretensions is unquestionably the better Institution. We cannot presume to say whether it was on this account that the T. I., received a Government grant this year of £850 in all, while the L. and H. S. obtained only £100." Now, with every wish to respect the opinions of the writer, we do not think that such observations in so influential a local Journal, arising either from neglect of information or reflection should be allowed to pass unnoticed, and we therefore take leave to point to the following indisputable facts, as giving a more correct view of the matter:—1st. Were the two Societies even to labour alike, it would not be quite fair to compare a hardy adult of thirty years, with a mere stripling, however stalwart, of four years growth. But, 2nd., it so happens, as regards the comparative proportion of fruits matured by the two associations, that though the Lit. and His. Society was instituted in 1824, the 1st volume of its Transactions (a moderate sized Octavo) did not make its appearance till 1829, and the 2d, in 1831; and that though the 4th part of the 3rd volume, came out in 1837, the 1st part of the 4th., or present volume was not issued till 1843, the 2nd., in March, 1854, after a long interval of 11 years, and the 3rd part only recently this year; and when the next will appear remains yet to be seen; thus yielding altogether four volumes, containing on a fair average from 100 to 120 original articles, in 31 years. Whereas, 3rd. the C. I., founded so late as 1851, has during the four short years of its existence, issued regularly during three of them a Monthly Quarto Journal in which, besides a variety of (avowedly intentional,) *miscellaneous* and *selected* matter, will be found scattered about 140 original articles of various discriptions, including the valuable monthly meteorological intelligence, which if bound up in the same form as the Transactions of the L. and H. S., would have furnished about *four* such volumes in as many years.

Mr. Roche's Essay on Anticosti, but of entering into considerable detail on the merits of the eminently patriotic views of the writer, by means of free progressive quotations from his valuable Remarks, in the confident hope of not only drawing public attention more generally towards an object of great public importance, but of happily, assisting in promoting the speedy peopling of the Island.

It is now near twenty years since the writer of this article, then on his way to England, was during a whole dreary tempestuous night in November, kept in no little *bodily fear* of of being either shipwrecked or worse, on the long proverbially dreaded desert coast of Anticosti; and had his attention and feelings ever since strongly enlisted in behalf of some ameliorations of its desolate state. It was, therefore, with no small satisfaction that he at once participated in the surprise expressed by Mr. Roche, that in the midst of the progress going on throughout British North America, in reclaiming the wilderness, and developing new sources of wealth, no account "had been taken of a valuable island, large enough to become a Province of itself, lying nearly in the centre of our North American colonies, and at the threshold of the most important colony of the whole; that while all is life and healthy activity about and beyond it, and a commerce, second hardly to the commerce of any one channel in the world, is carried past its shores, the seasons roll on without bringing to the latter any change in that state of desolation which invests it with frightful yet imaginary terrors, and which has done more to injure the reputation of the St. Lawrence navigation than all those real dangers upon the main shores of the river and gulf, where so many gallant vessels have been wrecked, and so many valuable lives have been destroyed."

Among the circumstances, (observes Mr. Roche) which have repelled all proper inquiry and all enterprise from Anticosti, and which have done much to injure the Province by giving a worse character to its great outlet than it really deserves, are former disasters from famine, which occurred there before provision posts were carefully kept up,* and the erroneous opinion which has hitherto prevailed, that a greater proportion of vessels have been wrecked upon the island than have been lost in any other part of the river or gulf. Thus the mariner has been taught to regard his approach to Anticosti with intense dread, the island having been described as presenting the greatest dangers to him when afloat, and as affording no sustenance for him if cast upon its shores.

But to those who have drawn conclusions unfavorable to the island, from the number of wrecks which have been reported to have taken place upon it, it is necessary to point out, that the wrecks, which in returns appear so formidable in the aggregate, under the head of "Anticosti," have not occurred at one spot, but at many spots widely separated, extending over a distance of 320 miles, that being the circumference of the island, and consequently the extent of coast in front, not taking into account the indentation caused by bays, creeks, &c. Take the same length of coast upon any part of the main shores of the river or gulf, and it will be found, upon proper inquiry, that six times as many wrecks have occurred within it each year, as have for the same period taken place upon Anticosti.

"And further, (observes our author,) the evil reputation which still hangs over the island, became attached to it many years ago, before its coasts were thoroughly surveyed, when it was laid down in the chart as being many miles shorter than it actually is, in consequence of which many vessels ran upon it in places where deep water was supposed to exist, and before lighthouses were placed there, since the erection of which and the late survey of its coasts, wrecks upon the island have become less frequent. Most of those which now occur there, are caused by the neglect of using the lead in foggy weather, many of them through the incapacity or drunkenness of masters, who, generally, are shamefully underpaid, and some of them through design, for the purpose of cheating the underwriters. Of these latter cases the Insurance officers are perfectly aware; but, instead of endeavoring to meet them by preventive measures, they increase the rates of insurance so as to cover such losses, by estimating for them in a certain proportion to the whole; thus making the entire trade pay for the dishonest acts of the rogue."

"At all events," it is justly remarked by Mr. Roche that, "to whatever extent plausible reasons may have once given a bad name to Anticosti, there is no just reason for that name being perpetuated; and those, who yet view the island as it was regarded shortly after the wreck of the Granicus, can neither comprehend the unjust grounds upon which it was then condemned, nor appreciate the importance to every country bordering upon the St. Lawrence, of many recent events, attending the rapid progress of the trade and general prosperity, which, with the exception of Anticosti, is going on in all parts of British North America. That the island should participate in that progress, it is necessary to divest it of the evil reputation through which it has been hitherto blighted: and this will be best accomplished by making known, in addition to what has been already advanced in its behalf, what it has yielded to the trifling labours of agriculture which have been attempted upon it, what its climate has been found to be by those who have resided there for many years, and what its natural resources and its important advantages of position really are.

"The island of Anticosti lies W.N.W. by E.S.E., between the 49th and 50th parallels of North latitude, and the 61st and 65th degrees of West longitude, about four hundred and twenty miles below Quebec, three parts of it being in the gulf, through which it stretches out towards the south-west coast of Newfoundland, and the remaining part in the river, the waters at the entrance of which it divides into two channels. It contains nearly two millions of acres, being upwards of one-fourth larger than Prince Edward's Island, which is a province of itself, with its Lieut. Governor, its legislature and a population of eighty thousand souls. It is about one hundred and thirty miles long and thirty-five broad in its widest parts, which is at the South West Point, nearly in the centre, whence it gradually narrows to both ends, the one terminating in Heath Point, with Fox Bay lying a few miles round the point upon its northern shore, and the other end terminating in West Point, with Ellis Bay a few miles short of it, looking towards the south. Thus there is a harbour upon each side and at each extremity of the island; but Ellis Bay is better situated for the general shipping of the St. Lawrence, has greater depth of water, and is much more spacious than the other, being about two miles wide and four deep, with good anchorage. The excellent position of the island in regard to ships, commerce, &c., becomes at once apparent, when we consider that every vessel must take either of the channels formed by Anticosti, upon entering or leaving the river, whether having passed from the Atlantic, or intending to pass to that ocean, through the Straits of Belleisle, now coming much into use, and about to be lighted, through the most frequented passage between Newfoundland and Cape Breton, or through the Gut of Canso, or whether running between Quebec and those portions of Canada, and of the Lower Provinces, lying upon the Gulf of St. Lawrence. In taking either of the channels formed by Anticosti, vessels pass close to the island, in consequence of the moderate breadth of the northern one, and of the strong south-east current which always runs along the southern channel, to avoid which, and the risk of being driven upon the truly dangerous coast of the south shore of the gulf and river, where, for several hundred miles, there is no harbour or place of shelter for any craft larger than a schooner, and where, for long distances, there is not one foot of beach outside the perpendicular cliffs to land upon, vessels generally stand out till they make the West Point of Anticosti, close to which is situated the convenient harbour of Ellis Bay, occupying a spot nearly mid-distance between the northern and southern banks of the St. Lawrence, and of easy access from both channels of the river. Considering that about two thousand vessels from Europe alone, will have made this point in the course of the present season, some slight idea may be conceived of the capabilities of position attached to the island, and in particular to Ellis Bay. The inner anchorage of this bay has a depth of from three to four fathoms at low water, with excellent holding ground, (gravel and mud), is of as large capacity as the harbour of Montreal, and has been found, by experience, to afford perfect shelter, in all winds, to vessels of upwards of 500 tons; while the outer portion of the anchorage could be materially improved at a trifling expense, so as to be able to contain in safety, during all winds, almost any number of vessels of the largest size. Docks, with a patent slip, &c., could also be constructed there, which would be admirably situated for the repair of vessels, stranded or receiving other damage throughout the St. Lawrence, most of them

* The sad wreck of the Granicus took place in 1828. Light-houses and provision stations were established in 1831.

becoming broken up by the action of the sea, and, in some cases, dismantled by wreckers, before they can obtain assistance from Quebec, which port, strange to say, is the only place from the Atlantic to Montreal, (a distance of upwards of eight hundred miles), where vessels can be properly overhauled, or be supplied with the commonest stores, such as anchors, chains, sails, &c. For steam tugs, employed for the relief of vessels in distress, Ellis Bay might also be made an excellent station. With the facilities there for procuring shelter for our shipping in a portion of the St. Lawrence, where a spacious and deep harbour is more wanted, than in any other part of the river or gulf, it is astonishing that no attention has yet been directed to that spot. This neglect, however, cannot long continue. It could be made not only a fine commercial harbour, but also an excellent naval station, in the most convenient and central spot for commanding, with a few steam-vessels or gunboats, the two entrances of the river, and for sending out cruisers up the latter, or to any part of the gulf.

Its influence as a check upon "wreckers," who swarm in the St. Lawrence more than is generally supposed, might also be enlarged upon.

Besides the advantages which have been glanced at as belonging to Ellis Bay, some of the best soil, and some natural meadows, producing excellent grasses, six feet high, are found upon its shores, where the resident in charge of the provision post, grows every description of vegetables; but wheat, or any other grain, has never been tried in that part of the island. It is also stated, that, within a few miles of the bay, wild hay could be cut sufficient to feed a thousand head of cattle during the winter. Nor is this spot barren in scenery; for, upon approaching it, a most pleasing view is obtained of the spacious bay, having in all parts a fine beach, which at each side is bounded by wooded cliffs, those on the east side showing table land and other heights beyond, and at the head of the bay the beach gently rises and expands into a slightly rolling country, containing forest and meadow land; the whole being relieved in the distance by two hills of moderate height, covered with trees. Near the centre of the bay, a few yards from the beach, stand the buildings, the garden and fields of the resident, close to a picturesque trout stream. When Anticosti shall be properly known and occupied, this spot will probably become the resort of many of those, who now seek health or recreation, at the less bracing and less interesting watering places upon the main shores of the river; and of the salubrity of the climate there can be no doubt, for all who have resided there, describe it as being the most healthy place in the world. The first seigneur, (to whom it was granted in 1680 for services rendered to the Crown of France), used to reside every summer upon the island, and it is supposed that he was buried there. At this spot there are many substantial elements for the growing up of a large and flourishing town, some of which are alluded to in other parts of this communication.

There is also excellent shelter for large schooners at Fox Bay, at the North-East end of the island, and also at the South West Point, where it is quite practicable to make a harbour of refuge for the largest ships; which would be of great use to homeward-bound vessels in the Autumn, whenever south-east winds set in, to run into and anchor, instead of being driven back for several hundred miles, and having to encounter again, under the worst circumstances, the most dangerous part of the whole navigation between the Atlantic and Quebec. There are also several good roadsteads, such as Bear Bay, situated on the north side of the island, sheltered from most winds, with good holding-ground. Observation River, lying five miles west of South West Point, has sometimes six feet of water at the entrance; and there is hardly a mile of coast on any part of the island without its stream of fresh and delicious water, many of them proceeding from lakes, one of which, at the head of Observation River, is supposed to be nearly twenty miles long and several broad. Some of the rivers have very high banks, with very beautiful falls, and excellent mill sites, and these falls have a good supply of water during the whole summer. The island on the south side generally rises from about twenty to sixty feet above the beach, (but at the entrance of Observation River it is between 200 and 300 feet high), and is nearly level to the centre, where a range of moderate sized hills appear to run its entire length, and upon the north side to terminate in steep cliffs. It is mostly covered with a thick forest of trees, stunted near the shore, (like those upon a great part of the coasts of England and of other countries), but which become gradually larger as they approach the interior, and are less exposed to the influence of the wind and sea. This is very remarkable upon some of the bays, where, at the exposed points, they are very small, and gradually increase in size from each side to the centre: those nearest the sea being some times quite white in appearance, from the salt which is thrown, and crystalizes upon them. It is the stunted growth of the wood upon the sea shore, which has given a coloring to the reports of those persons, who, having landed upon the beach for a few hours only, have pronounced judgment upon the whole island from what they saw there. The trees are spruce, fir, red and white birch, ash, quantities of very fine tamarack, and upon the north side of the island, some good sized pine. With the tamarack and pine growing there, and the immense quantities of valuable timber drifted upon the island from Quebec and other places after every easterly gale many ships might be built every year. Like the valuable meadows for cattle and sheep, which have recently been discovered in Minnesota in the "Far West," there are here many very fine natural meadows, producing rich grasses, five or six feet high; and in some parts there are alternate ranges of wood and open plain. On the south side of the island there are several peat bogs of some extent, and some salt marshes, caused by the overflowing of the sea at certain periods, which must tend to fertilize rather than to impoverish the land, and, near the South West Point, there are some large salt ponds, which, were labor plentiful there, might be turned to account in the manufacture of salt; a manufacture which would become of some value to a great part of our North American fisheries, which, as well as the whole of Canada, are now supplied with salt from England or the United States, and, for curing fish and provisions, bay salt, formed from the sea and from salt ponds, is the most valuable. In consequence of there not having been a sufficient supply of salt upon the island, an immense quantity of fish, caught at Anticosti last year, had to be thrown away.

Of the other resources and capabilities of Anticosti, in the event of its being auspiciously settled, the following may be mentioned:—

Rearing of cattle and sheep, for the supply of those engaged in the fisheries, of shipping, and of the dear markets at Quebec, would, no doubt, pay very handsomely. While the natural grasses are as rich as any upon this continent, it appears that cattle can be left out to graze there longer than they can be at Quebec, a circumstance which has just been communicated to the writer by the present lessee of the island, who has at this moment several head of fine cattle of the Ayrshire breed, at the South West Point. But if the natural grasses should not be found sufficient for numerous herds of cattle, the famous tussac grass of the Falkland Islands, which delights in a salt atmosphere, and which has been carried to the Orkney Islands, and been found to flourish there, might be introduced. At the former it grows upon peat similar to that which exists at Anticosti. The seed of this grass has already become an article of profitable export from the Falkland Islands; and the grass is found upon many parts of the coast of South America, where wild cattle abound. When we consider that remote and inclement Iceland raises her flocks and herds, her sheep numbering 500,000, her horses 60,000, and her horned cattle 40,000, and exports the finest fleeces, also dairy and other produce, we have every reason to hope, that Anticosti, situated in the midst of the fisheries, which employ many thousand men, of a vast traffic, carried on by upwards of two thousand ships, and within easy approach of many valuable markets, may be made as profitable a grazing country as any portion of British North America.

At the South West Point, both Mr. Corbet, the lessee of the island, and Mr. Pope, the light-house keeper, have several head of cattle, as well as pigs and poultry, all of which are in excellent condition. Of the former, Mr. Corbet says, they look better in the spring than cattle do at that season at any place upon the St. Lawrence below Quebec.

Resting upon the substratum of limestone, the soil of Anticosti should be a warm one, and if cleared to any extent, and thereby exposed to the sun, and drained where it may require drainage, it would no doubt become a productive one. For the purpose, either of drainage or of irrigation, as the one or the other may be desirable, every facility is offered by the numerous rivers and rapid streams existing in all parts of the island. The composition of the cliffs alone, some of which, according to Capt. Bayfield, R. N., contain sand, clay and limestone, indicates that there must be good soil of considerable extent in many parts of the island, which only requires clearing and cultivation to yield very fairly; for, with these substances, and the fine mould of the vegetable deposits, which have been accumulating in the woods for ages, what better farming lands could be desired?

Of the interior of Anticosti, our Author observes, that Mr. Corbet, who has resided at the South West Point for ten years, and who, in his various excursions, has seen more of the island than any other person, describes the soil to consist generally of "black, light soil, clay and sand," and states that, "from the immense quantities of sea-weed with which the shores abound, he believes the land could be made to yield every description of farm produce. In the same statement he refers to what he and Mr. Pope have accomplished at the South West Point. The writer had, however, obtained a similar statement from the son of Mr. Pope last autumn. At this spot, which Lieut. Baddeley, R. E., who visited it in 1831, declared to be the most barren and uninviting in the whole island, Mr. Pope grew last year the finest crop of oats, 300 bushels of the best potatoes, (the potato disease never having reached the island), and every other vegetable in perfection which is grown in Canada; and this he did upon a patch of land adjoining the bleak point where the light-house stands, where the soil consists of a description of black peat resting upon the limestone. Mr. Pope supposes, though he has never tried it, that wheat might be successfully cultivated in the interior, which has never been explored beyond ten or twelve miles from the beach, along the banks of some of the rivers, and then generally by hunters or fishermen; parties not likely to look for or to care about agricultural resources. How much, therefore, must still remain to be explored in an island 130 miles long by nearly 40 broad! Of vegetables, also, Mr. Pope could have disposed of any quantity to ships bound to Quebec, which are often becalmed off South West Point after a month or six weeks' voyage, with a prospect of being nearly another month in reaching their destination. The supplying ships under these circumstances, especially when conveying cabin passengers and emigrants, may become a very profitable occupation to the settler. Vegetables, meat, fish, soft-bread, &c., could be easily taken off to vessels in boats, as they are at Portsmouth, Yarmouth, and a number of other ports in England, under circumstances far less favorable, by bum-boats, the owners of which realize immense profits.

Mr. Morrison, a person well known in Quebec, who (having been previously employed at Anticosti by the North West Company,) was sent there about fifty years since, to explore a portion of the island for the purpose of forming a settlement, after mentioning in his report the excellency of the soil, and the timber which he found there, including ash, large pine and tamarack, says: "I had a house erected on the south side of the island, around which we made a clearance, and sowed wheat, barley, and oats, all of which grew luxuriantly and ripened. Vegetables and garden stuffs of every description grew remarkably well, and came to as great perfection as any I have seen in Canada. There is very good clay on the island, of which I made some bricks, and built an oven, and whilst there I imported some cattle from Nova Scotia, and found that they throve well." Why the explorations and labors of Mr. Morrison led to no result at that time, is thus explained in his statement, made in 1842, to the present proprietors of the island: "After I returned to Quebec and made my report, Mr. Grant, the then proprietor of the largest portion of Anticosti, at once came to the determination of settling it, and offered to me the superintendence. During the winter of 1804, I engaged by his directions eighteen men, intending to proceed with them to Anticosti in the spring, and to immediately set about cutting a road across the island; but, unfortunately, Mr. Grant died about that time, and the intention which had been entertained of colonizing the island was abandoned, a circumstance much to be regretted."

Copious as our extracts have already been, we regard the subject and its object of such great importance and general interest, that we offer no apology for adding the following in as condensed a form as possible:

While all parties consulted generally agree as to the timber, and the nature of the soil, they also represent the climate to be milder than at Quebec; and as regards the degree of heat and cold, much like that of Newfoundland, but not so subject to fogs; and that the navigation is open for about six weeks longer than at Quebec; and further, that it is probable that, with properly constructed and manned steamboats, or the boats so favourably spoken of by Polar navigators, a communication between the south-west point of the Island and the south shore of the St. Lawrence, might occasionally be kept open during the whole winter, the ice never extending across, or blocking up the whole of the channel.

We now pass on to notice, with Mr. Roche, those resources belonging to Anticosti, which, being wholly independent of soil and climate, may be turned to immediate account. These principally consist of its sea and river fisheries, which, although comparatively neglected by Canada, may be classed among the most valuable fisheries of British North America.

In the recent report, published by the New Brunswick Government upon the fisheries of that province, mention is made of the valuable whale and cod fisheries existing upon the coast of Anticosti; and it is stated that the Jersey houses fit out vessels to carry on the former upon both sides of the island, and up the St. Lawrence as far as Bic, some of the whales, ("hump backs"), being seventy feet long, and yielding eight tons of oil; while the fishermen of Gaspé frequently resort to the east end of the island and take cod in great abundance.

It thus appears that on every side of Anticosti valuable whales abound; the pursuit of which, and of seals and cod, it is not improbable, could be carried on in winter as well as in summer, were the attempt to be properly made.

Of cod, (observes Mr. Roche), Mr. Corbet remarks that "one boat, with two good fishermen, could take off South West Point, or at Fox Bay, eighteen hundred of these fish in one day:" while Mr. Morrison stated that cod, halibut, and a variety of other fish, could be caught all round the island in incalculable quantities, and that no finer cod is caught on any part of the coast of America, or on the banks of Newfoundland, than is to be met with there. To this may be added the testimony of Capt. Fair, R.N., of H. M. ship Champion, who states that he met a few shallops from the Magdalen Islands, at the east end of Anticosti, where they found cod in great abundance, and of excellent quality.

Of hardly less value than the former is the seal fishery, which could certainly be carried on in winter, as well as in summer, many seals being seen on the ice during the former season and in the spring, and thousands of them being observed during the summer and autumn, at the entrance of all the bays and rivers, where they remain almost entirely unmolested. To show the value of this fishery in the gulf, the New Brunswick official report, already cited, brings forward an instance of a schooner engaged in it from Sydney, Cape Breton, having cleared £14,000, within three weeks of her having left that port. Yet at Anticosti, where seals abound more than in most parts of the gulf, this fishery is at present almost entirely neglected; the Americans and others, who resort to its neighbourhood, being principally engrossed with the still more profitable cod and mackerel fisheries. For the storing and preservation of seal, whale and cod oil, the temperate degree of heat at Anticosti during the summer, is particularly favorable.

At the present moment the mackerel fishery is the most lucrative one in the St. Lawrence, and is the most extensively pursued; mackerel now selling at Boston for nineteen dollars a barrel, and at Halifax and Quebec for a few dollars less than that sum. No part of the gulf abounds with this fish more than the neighbourhood of Anticosti. Many schooners visit the coasts of the latter from the United States, the Lower Provinces, and a few from Gaspé, to carry on this fishery, in which they are very successful; and Mr. Corbet states that the mackerel he has seen in July and August come in shoals so thick and so close to the shore, that as many as one hundred barrels could be taken in one haul of the net. A few hours' work will thus sometimes pay the whole expenses of a schooner during the season.

Herrings, as fine as any in the world, are as plentiful about the island as mackerel; but, from the wretched manner in which they are cured, they obtain a much less price in the market, and are, therefore, comparatively neglected by the fishermen.

At the entrances of all the rivers and creeks immense quantities of lobsters are thrown up by the sea; the collection of which, and the preserving them on the spot for distant markets, or sending them fresh in vessels containing wells, to our home markets, might render this fishery a very profitable one. Eels are also very numerous and very fine, and are often collected by parties of Indians, who come over for the purpose from Mingan, and who obtain a high price for them from the Americans. Some of the halibut, which are found off the coast, attain the weight of three or four hundred pounds.

The caplin, which are now merely used as bait for cod, are so abundant around the island, that they are some times thrown up by the sea and cover the shore to the depth of two feet. Were they pro-

perly cured and exported, they would find good markets in Europe; or oil of an excellent quality could be made from them by the simple process of boiling.

The number of schooners which resort to the shores of Anticosti, from the United States, the Lower Provinces and the Magdalen Islands, in pursuit of the cod and mackerel, is so great, that there are sometimes as many as one hundred vessels fishing between the East Point and Fox Bay at one time, all of which are generally very successful. If these fisheries can be so profitable to expensively fitted out schooners, (of from 40 to 150 tons), some of which come a distance of fifteen hundred miles, and have to bring every supply, including provisions and salt, with them, how much more profitable would they become to parties residing upon the island, who would have their supplies upon the spot, and who could carry on their operations in boats. How important also to the latter, would become the trade which might be created with the former: the supplying them with provisions, often with fishing gear, and with every description of marine stores; and how soon would such a trade lead to more extensive transactions, in regard to the purchase of fish upon the spot, and the disposal of it in the best markets, and to a further trade in West India, South American and Mediterranean produce, obtained in exchange for fish, and being in great demand in Canada. It might also lead to the gradual rise, at different points of the island, of good sized villages, and ultimately of towns.

Of the river and lake fisheries of Anticosti, Mr. Corbet, who leases them, as well as the right of hunting the whole island, but who keeps up a very small establishment, and consequently makes use of his privilege to a very slight extent, says: "I have frequently, along with two Indians, taken in the month of July, in one day, twelve hundred salmon-trout, and upwards of two hundred salmon, out of Observation River, near the South West Point, the majority of the salmon-trout weighing four pounds, and the salmon from twelve to fifteen pounds;" and Mr. Morrison states, that the first day he went up Salmon River he caught, in a very short time, with a small net, from two hundred to three hundred fine salmon; and that, too, by confining his fishing to only two or three of the numerous holes to which salmon resort in that river. Even in winter Mr. Corbet has caught quanties of fine trout, by cutting a hole in the ice, and fishing with a hook. This gentleman owns a schooner, in which he sends the produce of the fisheries, and of the chase, obtained by him, to the Quebec market, where it commands a high price. The master of this schooner is one of the many parties, who are desirous of purchasing land, and settling entirely upon the island, with which he has been connected for fifteen years.

Though all the rivers of Anticosti abound with the finest salmon, few of them are fished to any extent, in consequence of there being but a small number of persons residing upon this island, and those who come there not being prepared, and not having the right to fish in the rivers, which, with sufficient attention and judicious management, might be made almost as valuable as the best salmon rivers in Scotland, for each of which a rent is obtained of from five to fifteen thousand pounds sterling, per annum. The markets for fish in the United States, being about to be thrown open to Canada, under the Reciprocity Treaty, will soon become quite as remunerative as any in Europe, and will consequently raise the value of our river fisheries to what is obtained for the most valuable of the former.

The porpoise fishery, which is successfully conducted at Tadousac, at the entrance of the Saguenay, each porpoise caught being worth £25, in the leather and oil which it is made to yield, might also be carried on at Anticosti at a considerable profit, the latter being as well situated for the purpose as the former.

The hunting upon the island is of considerable value, though of far less importance than its fisheries. The animals consist of black bears, martins, otters, and the silver gray, the red, the black, and sometimes the white fox; all of which are very numerous, and for the skins of which Mr. Corbert realizes excellent prices in the Quebec market.

Great quantities of ducks, geese, partridges, and other fowl, also resort to the lakes upon the island, some of which are of a species peculiar to England; and a duck, called the *muniack*, remains about the shore all the winter.

Thus, even in respect to food, Anticosti, in an uncultivated state, is not so inhospitable as it is generally supposed to be, for with its fish, its bears' flesh and its fowl in abundance, what active sportsman is there, who could not often obtain a meal there, with his rod, or with his gun?

With so many other resources, it is of little consequence whether or not Anticosti shall be found to possess valuable minerals. There is no account of its having been visited by a geologist; but iron ore of great richness, is frequently met with.

Mr. M'Ewan mentions having found freestone, some as also as fine as water of Ayr-stone, and some as coarse as grindstone. The fossiliferous limestone, which exists in great quantities upon the shores in thick horizontal strata, is of so fine a grain and color, and so hard, that it is deservedly classed under the head of marble.

Taken separately, observes Mr. Roche, the resources of Anticosti, as they are yet known, may not appear so important as those of countries more favored by careful attention, by settlement, and by a fair expenditure upon them of labor and science combined, under which their resources have been partially developed; but, viewed together, they cannot but be regarded, by any unprejudiced observer, as of considerable value, and as giving promise, (upon the introduction there of those agencies which have been successfully at work elsewhere), of becoming a source of wealth and prosperity to the whole province. No comprehensive view of the resources and capabilities of the island having ever been taken, is one reason why it has been so long neglected; and why, throughout its three thousand three hundred square miles of territory, it yet gives shelter to no more than some fifteen or twenty residents, distributed between the fishing stations of the lessee, the light-houses and the provision posts, all of which are situated upon the south side of the island; the fishing stations being at the South West Point and the entrances of Observation and *Becscie* Rivers, the light-houses at the East Point and the South West Point, and the provision posts being also at the light-house stations, at Shallop Creek, about half way between them, and at Ellis Bay. The state of desolation in which the island remains, is shown by the necessity for keeping up these provision posts for shipwrecked sailors, in the same manner as, in former days, wells were dug, shady trees planted, and caravansaries maintained in the desert, for the relief of pilgrims and travellers by the Arab and Indian princes: but, unlike the deserts of the East, Anticosti has hitherto been condemned to desolation, not on account of its being incapable of being made to sustain a population, but because of the superficial examinations of its soil, bordering upon the sea shore only, which have been made from time to time, and of the reports and general rumours, based upon those examinations, similar to those unjust popular rumours, which have for many years kept back many other countries, since become known and now arrived at a flourishing condition, and which, until the last few years, condemned Newfoundland to be a mere fishing station. Even Prince Edward's Island, now the garden of our maritime provinces, was for a long period kept back by prejudices, as absurd and unjust, as those which long operated against the progress of Nova Scotia and Newfoundland, and which up to the present time, have rendered Anticosti worse than useless; a terror to the mariner, and an inhospitable wilderness at the threshold of the province, frowning upon, and depressing in spirit, all who seek Canada by the route of the St. Lawrence.

But what Mr. Roche conceives to give more value to Anticosti, than its capabilities of soil and climate, or its many other resources, whether belonging to the sea, to the rivers, or to the land, is its position at the entrance of the St. Lawrence, in the direct and only channel of an immense traffic, which, within a very short period, is certain to become vastly increased, not only by the throwing open to the Americans the navigation of the St. Lawrence, under the reciprocity treaty, recently concluded, but also by the extension of the trade of the Province to all parts of the world.

"Whether viewed with regard to this future trade, or to the existing maritime trade of the Province, which is confined to England, the United States, the Lower Provinces, and the West Indies; to the establishment of an *entrepot* in the direct channel of that trade, and of a coaling station for the three lines of steamships about to run between England and Quebec; or viewed as affording the most favourable points for establishing fishing stations, and of settlements and villages for supplying the fishermen belonging to the island, as well as those who will be attracted to its coast fisheries from a distance, and who will be desirous to rent certain portions of the shore for the purpose of drying fish there; the position of Anticosti is a most admirable one; and if the island were composed of nothing but rock, without soil sufficient to produce a blade of grass, its position

alone would render it capable of being made of more value than the most favoured island in point of soil and climate, not possessing the advantages of that position."

Our nearly exhausted space will only permit us to add to the above copious quotations, an hearty assent to Mr. Roche's conviction that, besides participating in the main trade of the Province through Quebec, the neighbouring rising settlements up the Saguenay, towards Lake St. John, might be made to contribute to the importance of Anticosti, and that it might even become an emporium of a portion of the commerce which Canada is now in a position to open with all parts of the world; for to large vessels coming late in the season off long voyages from the West Indies, China, &c., it might frequently be of consequence to avoid the delays and dangers attending going up the St. Lawrence.

Mr. Roche winds up the main position of his interesting and instructive Paper, by stating that after recording all the information received from others, he seized an opportunity of visiting the Island himself, and, in addition to his own personal observations, making enquiries into its present position from nearly every person residing on it; and that the results fully confirmed all that he had written; but to these we are unable to refer; and he concludes with strenuously recommending the settlement of the Island to be undertaken by a *Joint Stock Company*, if encouraged by a preliminary Survey of it by the Government—very properly observing that notwithstanding all that he had learnt, it was very evident that "not one-tenth of the Island has ever been explored, or even traversed; the hunters and fishermen, and others who have been upon it, having confined their excursions to the sea-shore and the principal rivers, hardly ever venturing any distance back from the latter. Like all countries, Anticosti must contain much bad land as well as good, and the former might be supposed to prevail along the shore, where, in some parts, there are quaking bogs, like those of Ireland (which, however, may be drained and be turned into the richest soil), and a good deal of rock; but, whether the good or the bad land predominate to any extent throughout the Island, there can be no means of ascertaining, without a thorough survey of the interior. That much good land, besides those fertile spots which have been pointed out by the various parties referred to, is likely to be discovered by such a survey, the writer is now enabled to show, upon one of the highest authorities existing upon this continent, namely, that of Professor J. Hall, Palæontologist of the New York State Geological Survey, and author of the *Palæontology of New York*, who, having examined a number of fossils brought from Anticosti, described them as indicating the occurrence of limestone beds, with alternations of shale, the decomposition of which will furnish a productive soil, from abounding in calcareous matter; an opinion coincided in by our talented Geologist, Mr. Logan, in addition to his expressing a strong belief that a regular Geological Survey of the Island was likely to lead to discoveries which would give to it an increased economic value; a specimen of its marble having obtained the first prize at the recent Provincial Exhibition at Quebec.

In this very judicious suggestion we cordially concur; as not only the most feasible, but also likely to be the most speedy as well as most successful mode of carrying out an enterprise which, we have long been persuaded, will prove of incalculable benefit to the country, and be certain of, in a few years, transforming the long-dreaded, desolate shores of Anticosti into a cheerful view of cultivated farms and thriving villages, sprinkled round well-frequented harbours and profitable fishing stations.

We now bring our lengthened quotations and remarks to a close, with thankful acknowledgments to the talented author for having directed public attention to a new, promising and extensive field for various kinds of industry, and not without a hope that the considerate suggestions contained in the few following lines may be speedily acted upon :—

"As Anticosti belongs to a number of persons, some of them residing in Canada, and others in England, who are not likely to combine in any comprehensive plan for developing its resources, but who would no doubt be prepared to dispose of their interest in it at a reasonable price, it is to be desired, that either the Government, or some public company in Canada or England, or one belonging to both countries, should purchase the island, and expend sufficient means, which the present proprietors could not afford, in turning its resources into account. Of the two, a company, which could enter into the several undertakings glanced at in this communication, would be the more suitable for the purpose; but the field may be made to embrace so many, and such varied objects, that it could well give employment to several distinct companies. There might then be a colonization company, a fishing company, and a commercial company; the first purchasing the whole island, and selling or leasing to the others, those portions of the coast at which the operations of the latter could be most conveniently carried on. A thorough survey, however, of the whole island might be well undertaken by the Government in the meantime; for, although it belongs to private individuals, it is of the highest public importance, for many reasons, which must suggest themselves in the course of this communication, that the island should not be allowed to continue in its present state of desolation; besides which, every large addition made to the inhabited seaboard of the St. Lawrence, must materially increase the commerce, the shipping, and the wealth of the Province."

Direct Nature-Printing from Wood,

IN AN ENDLESS WAY, APPLIED TO THE DECORATIVE ARTS.

BY FELIX ABATE, OF NAPLES.

In the first communication I had the honour to make to the Society of Arts* on this invention, I described two different processes which I employ for the purpose; the one of them depending upon the effects produced by the joint action of acids and heat upon vegetable substances; and the other, a more complex one, as it comprises the different processes upon which the art of dyeing and printing textile materials rests. Both these processes, by different means, produce nearly indentical results.

In order to bring my invention to practical utility, and make it serve the various purposes of the decorative arts to which it may be applied, I thought it was requisite that the nature-prints should be made in an endless way, as is done for woven stuffs, which, being an essential point for the application of the invention to house decoration, is undoubtedly the most suitable way to obtain that cheapness of manufacture which is the first condition for the general adoption and success of every new invention. I had then to choose between the two above-mentioned processes to which of them I should give the preference, and I found the second one to be in many respects superior to the other.

A machine, constructed upon the principle of the cylinder printing-machine, was then requisite for my purpose, in which the printing cylinder should be made, either solid or veneered, of the wood from which impressions are intended to be taken. However, this contrivance, which in the last quarter of a century has brought such important results in the art of printing textile manufactures, could not be applied to the above purpose without meeting with peculiar difficulties, against which, in fact, I had long to contend. The most serious of these difficulties

* See Journal of the Society of Arts, Vol. ii., p. 539.

were two—the one was, in contriving a self-acting apparatus for feeding the cylinder with the requisite fluid, at such a constant and controllable degree as experience has found suitable in the printing with flat blocks by manual labour; the other was in the discovery of some new means to dispense with the bathing of the printed stuff either in a mordant or in a colouring bath, whenever paper is the stuff to be printed on; as unsized paper, which is the most suitable for the purpose, will not bear, in a wet state, being drawn through the machine. Besides, it was desirable that the different successive operations which are performed in printing textile manufactures should be done at one time and in a single revolution of the machine, in order to reduce the cost of manufacture to its minimum.

I have made the cylinder-feeding apparatus in the shape of a trough, in which the wetting fluid is kept at a constant level through a reservoir from above and a discharge from below. A cloth, one side of which is immersed in the liquid, acts by capillary attraction as a syphon, and communicates the liquid in a continuous supply to to the revolving cylinder with which it is in contact from the other side—an elastic cushion placed between the trough and the cloth securing the requisite equality of pressure of the latter upon the cylinder, while a pair of screws pressing on the back of the trough serve to regulate at will the degree of such pressure. This apparatus answers the purpose perfectly well.

In order to dispense with the bathing of the printed stuff, I had recourse to the metallic sulphurets, which are known to produce more lasting colours than the vegetable dyeing stuffs. Therefore I contrived to obtain the required effects by using for the printing menstrum any of those metallic salts, such as copper, iron, &c., which by the action of hydrosulphuretted acid or alkalies are precipitated in the state of metallic coloured sulphurets; I use such reagents in the gaseous form, such as hydrosulphuretted ammoniacal gas. The printed stuff is made to pass direct from the cylinder after it is printed, through a box, which is kept constantly supplied with a current of gas; it comes out of the box completely finished; then, passing through a stove kept at a moderate heat, dries—and lastly winds itself round a reel, ready for sale. In this way the thorough printing of the stuff in a single revolution of the machine is performed.

The principle of using the hydrosulphurets in the gaseous state in the art of dyeing, which, as far as my knowledge goes, has never been done before, is of considerable importance in that branch of manufacture, as it produces the most satisfactory results with the greatest convenience and cheapness, while it entirely obviates the evil arising from the noxious evaporations of the hydrosulphurets when used in the liquid state and left to evaporate in the open air.

On Hydraulic Limes,

ARTIFICIAL STONES, AND DIFFERENT NOVEL APPLICATIONS OF SOLUBLE ALKALINE SILICATES.

BY M. FR. KUHLMAN.*

Entrusted, about the close of the year 1840, with some trials relative to some abundant efflorescence, which was formed on a perfectly new building, and which was considered to be due to the formation of nitre, I was soon convinced that the efflorescent salts were formed to a great extent of carbonate of soda, and that the lime which had been used (hydraulic lime, from the neighbourhood of Tournay), was the cause of the efflorescence which had been observed. A closer examination soon taught me that all limes, and particularly hydraulic limes and natural cements, contained appreciable quantities of potash and soda.

THEORY OF HYDRAULIC LIMES.

In a work which I had the honour of presenting to the Academy, at a meeting held on the 5th of May, 1841, I endeavoured to explain the part which potash and soda might play in stones and cements, and I admitted that these alkalies served to bring the silica to the lime, and thus to form silicates, which, by means of the application of water, solidified a portion of the mass, producing the formation of a hydrate, analagous to that which takes place with plaster. I have pointed out since then to the Academy numerous facts as the basis of this theory, and that, among others, of the immediate change from fat lime to hydraulic lime, by simply treating with a solution of silicate of potash. If, after the burning of the limestone, potash is in contact with silica, the silicate which is formed must necessarily react, and this can only take place as soon as the burnt lime is brought into contact with water.

I have greatly added to my experiments on this head, and I have established the fact that, with fat lime and silicate of potash, both of them pulverised and mixed in the proportion of 10 or 12 of silicate to 100 of lime, a lime can be obtained which shall have all the characteristics of hydraulic lime. If these substances are not well pulverised the reaction will be very incomplete, and an effect will subsequently be produced, bringing on disintegration. If from my former trials there results the possibility of converting a fat lime into an hydraulic mortar, by sprinkling it with a solution of an alkaline silicate, in my more recent trials I have found a means of producing at once with a vitreous silicate and lime, hydraulic cements of any required degree of strength. This will enable us to form, at a reasonable expense, buildings to stand the action of water, in places where fat limes alone are now found. Powdered silicate of potash in some sort becomes an agent for producing this hydraulic property, of which future experience will determine the value.

ARTIFICIAL STONES.

Looking at the great affinity of lime for silica dissolved in potash, I was naturally led to examine the action of alkaline silicates on calcareous stones. Here I was still more fortunate, for the alkaline silicates became at once the means of a variety of applications of the highest utility. Let us look at what is said on this point in the *Comptes Rendus* of the Society's meetings.

"By mixing some powdered chalk in a solution of silicate of potash, a cement is obtained, which hardens slowly in the air, assuming a degree of stiffness, which, under certain circumstances, renders it applicable for the restoration of public monuments and the manufacture of moulded articles.

"Chalk, whether in an artificial paste or in its natural state, plunged into a solution of silicate of potash, takes up, even when cold, a quantity of silica, which may be increased considerably by exposing the chalk alternately to the action of the siliceous solution and the air. The chalk assumes a smooth appearance, a compact grain, and a colour more or less yellow, according as it is more or less impregnated with iron.

"Stone thus prepared is susceptible of a high polish. The hardness, which is at first but superficial, penetrates by degrees into the centre, even where there is considerable thickness. It appears capable of becoming of incontestible utility in the form-

* Cosmos.

ation of works of sculpture, and ornaments of the most delicate workmanship; for when the silicifying process—"*silicatisation*"—has been effected on well-dried chalk, without which good results are not possible, the surface remains unalterable.

"Some attempts made to render this stone applicable for lithography give promise of great success.

"This method of converting soft limestone into siliceous limestone is likely to become a great acquisition in the art of building. Ornaments, unaffected by damp, and of great hardness, may thus be obtained at little cost; and, in many cases, a plaster made with a solution of silicate of potash will preserve from subsequent decay ancient monuments formed of soft lime stone. This same plaster may become of general application in those countries where, as in Champagne, chalk forms almost the only building material."

I have shown experimentally that one part of the silica from the silicate becomes separated by the action of the carbonic acid of the air, but that those parts of the silicate which have come into contact with a sufficient quantity of carbonate of lime, pass into the state of silicate of lime. My work, presented to the Academy in 1841, pointed out numerous industrial purposes to which the impregnating of porous bodies of mineral substances might be applied, whether the objects operated upon were organic or inorganic. Considering these applications of the art as of the first importance in building, I have attempted to extend them, and I have just laid before the Academy a new series of observations.

HARMONIZING THE SHADES OF THE SILICIFIED STONE.

I have given the name of "*silicatisation*" to this remarkable conversion of soft and porous limestone into siliceous and compact limestone. As the operation of this process to articles of sculpture and building materials gives rise to a colouring very frequently so marked as to render the joinings more apparent and the veins more distinct, I have been compelled to seek a remedy for this objection.

There are two essential and general points to be met. Chalk walls are too white, while some kinds of ferruginous limestones are too sombre in their shades. To obviate this inconvenience, I perform the *silicatisation* of limestones which are too white with a double silicate of potash and magnesia. This is a vitreous substance, which forms a brown solution, and which when used in the process causes a little oxide of manganese to be deposited in the artificial siliceous paste. Oxide of cobalt, too, will combine, though in very small quantities, with silicate of potash. Silica precipitated by a current of carbonic acid is of a brilliant azure blue. This silicate may be used in the treatment of white marbles.

When the shades of the stone are too decided, and that is the most common defect, I obtain good results by mixing in the silicate solution a small quantity of artificial sulphate of barytes, which in penetrating the porous stone, whilst it forms a layer of silica, remains fixed, entering, as we shall see below, into a state of chemical combination. As regards the joints, they may be made with common cements, the shades of which may be rendered lighter by means of some white substances, but they may be still more entirely concealed with broken pieces of the stone itself mixed with silicate of potash, the whole being well pulverised previous to its use, and applied in a state of liquid paste.

COLOURING THE STONE.

In the course of my researches for giving to these silicified stones shades which would cause those portions of our buildings which had been submitted to this process to harmonise with those which had not, I was led to submit the stones to an actual dyeing process by impregnating them in the first instance with certain metallic salts, which by precipitation would produce the required colour.

Thus, impregnating the stone with salts of lead or copper, and afterwards bringing it into contact with sulphuretted hydrogen gas, or a solution of hydrosulphuret of ammonia, I obtain at will grey, black, or brown shades; with salt of copper and ferrocyanide of potassium I get shades of copper colour, &c.

In the present case I have made an observation which in a chemical point of view is not devoid of interest.

I have stated that the porous limestones, when submitted at a boiling heat to solutions of metallic sulphates whose bases are insoluble in water, give rise during the whole reaction, to a disengagement of carbonic acid, and to the fixing in sufficient depths metallic oxides in intimate combination with sulphate of lime. When the metallic sulphates have a coloured base, very beautiful tints of different and perfect shades are obtained. Thus, with sulphate of iron we get the production of a tint in red rust, more or less deep according as we operate with solutions of green vitriol more or less concentrated; with sulphate of copper the stone takes a magnificent green tint; with sulphate of manganese brown shades are obtained; with a mixture of sulphate of iron and sulphate of copper we get a chocolate colour. I have also experimented with sulphates of nickel, chromium, cobalt, &c., and with mixtures of these sulphates.

The affinities which determine the reactions in question are sufficiently powerful to cause the metallic oxides to be completely absorbed by the stone, so much so, that certain oxides, such as that of copper, for instance, entirely disappear from the solutions after boiling with an excess of chalk.

It is remarkable, that when in operating with mixtures of salts of copper and salts of iron or of manganese, the oxides of iron and manganese are the first to be thrown down.

When we operate with sulphates having a colourless base, such as sulphate of zinc, magnesia, or alumina, we equally obtain the precipitation from the oxide, and their penetration to a certain depth in the stone, with a disengagement of carbonic acid.

The bi-sulphate of lime gives analagous results.

In general, when we intend to use coloured stones in buildings, &c., or to form mosaics, it will be found useful to increase their hardness by the silicifying process.

We may proceed in the same way with articles in shell, white coral, &c., in which the colour may be produced by the same process, acting at different pressures.

I will conclude this head with an important observation, which is, that the double sulphates which are formed in penetrating the stone, make a body with it, and increase its hardness to such an extent, that when certain sulphates are employed, such as that of zinc, the silicifying process becomes unnecessary.

The editor of "Cosmos" adds, the process which has just been described, is likely to tend to the production of a great and new industry, splendid specimens of which are to be found in the Exposition Universelle, placed in the central gallery of the "Annexe," on the banks of the river, opposite the produce from the mines of Anzin. We shall examine these specimens with care, and give a detailed account of them when we treat of the section of the chemical arts. The display made by the celebrated chemist of Lille is one which deserves great attention.

The Arctic Expeditions.

The Select Committee appointed to inquire into the circumstances of the Expedition to the Arctic Seas, commanded by Captain M'Clure, of the Royal Navy, with a view to ascertain whether any and what reward may be due for the services rendered on that occasion, and who were further instructed to examine into the claims of Captains Collinson and Kellett, with a view to ascertain whether any and what reward may be due to them for the services rendered on the occasion of that expedition; having examined some of the most distinguished explorers of the Arctic regions, including those who were ordered to relieve or ascertain the fate of the lamented Sir John Franklin; having also had before them the evidence of others well acquainted with the Polar Seas, and also the report and evidence of Captain M'Clure, have considered the other matters to them referred, and agreed to a report of which the following paragraphs are the most interesting and important:—

"The attempt to discover a water communication through the Arctic Regions between the Pacific and Atlantic Oceans is one which has engaged the attention of maritime nations, and especially that of Great Britain, for a period now extending over nearly three centuries. It has fallen to the lot of Captain M'Clure, his officers and crew, to set at rest this question. They are undoubtedly the first who have passed by water from sea to sea, and have returned to this country a living evidence of the existence of a north-west passage.

"On the 30th July, 1850, the Investigator parted company from Her Majesty's ship Herald, Captain Kellett, off Cape Lisburne, and stood to the northward until the morning of the 2d of August, when the ice was first fallen in with, in lat. 72° 1′, long. 166° 12′ W. Captain M'Clure worked along its edge until midnight of the 5th, when Point Barrow was rounded in open water; from this point his progress was beset with difficulties and anxieties of no ordinary character, having to traverse an ice-encumbered sea hitherto considered impracticable for navigation. In this sea the Investigator continued her course along the north coast of America, and on the 30th of August reached Cape Bathurst, having in the interval threaded her course amid sandbanks and heavy masses of ice, a great portion of that time enveloped in thick fog, where the lead was the only guide.

"Here, finding that the ice pressed upon the shore, barring any further advance, Captain M'Clure anchored till the 1st of September, when the ice slightly moving enabled him to round the Cape, crossing Franklin Bay, and on the morning of the 6th high land was observable to the N.E., and on the 7th Captain M'Clure landed on its southern extremity, taking possession, in the name of Her Most Gracious Majesty, with the usual ceremonies, naming it Baring's Land, after the First Lord of the Admiralty. Proceeding to the N.E., through continuous fogs, until the morning of the 9th, when it clearing a little, high land was remarked, to which he gave the name of Prince Albert; and on the 10th two small islands were passed, which were called after her Royal Highness the Princess Royal; the further advance of the Investigator was then impeded by ice setting in from the N.E., which beset her, and in which she drifted about the straits in great peril, attached to a small piece of ice, drawing eight fathoms of water, until the 30th of Sept., when she was firmly frozen in. Captain M'Clure, entertaining a strong impression that the waters in which the Investigator then lay communicated with those of Barrow's Strait, and that the important question of a north-west passage might now be solved, set out with a sledge and a few men on the 21st of October for the purpose of testing this conviction, having previously left instructions for the guidance of the commanding officer, in the event of any disruption of the ice, or other casualities, preventing his return to the ship.

"On the 26th of October, Captain M'Clure and his party reached Point Russell, and having ascended an elevation of about 600 feet, commanding a very extensive view, had the gratification of finding that their arduous and most fatiguing journey had not been in vain, for beneath them lay the frozen waters of Parry or Melville Sound, proving beyond doubt that 'a north-west passage from the Atlantic to the Pacific Ocean existed.'

"In honour of this event, Captain M'Clure named the strait in which he had left the Investigator after his Royal Highness the Prince of Wales.

"The party reached the ship again on the 31st of October, and remained frozen in until the 14th of July, 1851, when the ice broke up. Every effort was then made to get to Parry Sound; but, in consequence of the quantity of ice coming in from the northward, these efforts were not attended with success.

"The ship's furthest advance being lat. 73.14 N., and long. 115.32 W., Captain M'Clure therefore determined on bearing up, and attempted a passage into Parry Sound, to the westward, and along the shore of Baring's Land, which he was induced, from apparent circumstances, to consider an island.

"On the 14th of August he accordingly returned southward, and, rounding Nelson's Head, made his way along the west shore of that island, accomplishing what Captain M'Clure, in his published despatches, has styled, 'The terrific passage of that terrible Polar sea;' and on the 24th of September, after several providential escapes, succeeded in bringing the Investigator into a bay on the northern coast, which, in thankfulness for his preservation, he has appropriately named the Bay of Mercy, and in the same night was firmly frozen in.

"It being now evident that the Investigator had taken up her winter quarters, and her release upon the following season being doubtful, Captain M'Clure thought it advisable to place himself, his officers, and crew upon two-thirds allowance of all species of provision, and this was rigidly adhered to during the period of 20 months, in a climate where a greater supply of food is required to sustain men in a healthy condition than in others more temperate. These privations were borne by the crew with uncomplaining fortitude, notwithstanding their effects became painfully visible as their third winter drew towards a close, in all by their altered personal appearance, and in some by their weakened mental faculties.

"On the 11th of April, 1852, Captain M'Clure proceeded with a party by sledge to Winter Harbour, in Melville Island, depositing a cylinder containing a summary of his proceedings, and returned to the ship on the 9th of May, where he remained for 11 months.

"On the 6th of April, 1853, Captain M'Clure received a communication, brought by Lieutenant Pim, who had been dispatched from Melville Island by Captain Kellett, who had found the record left there by Capt. M'Clure in April, 1852, and on the 7th crossed that portion of the Arctic Sea now called Banks's Strait, to that officer's ship, at Dealy Island, a small island off Melville Island, which he reached on the 19th, and arranged with Captain Kellett, that if 20 volunteers could be found to remain with him, in the hope of extricating the Investigator during the navigable season of 1853, he had his permission to do so, if not, Captain M'Clure and his crew were to abandon their ship and join the Resolute, Captain Kellett.

"About this period Lieutenant Cresswell, of the Investigator, was despatched by Captain M'Clure to England to report the position of that ship.

"Captain M'Clure rejoined the Investigator on the 19th of May, and finding that a sufficient number of men would not volunteer to remain, he was compelled to leave the Investigator in the Bay of Mercy, which he did on the 3rd of June, and reached the Resolute on the 21st.

"On the 18th of August Captain M'Clure, his officers and crew, quitted Dealy Island in the Resolute, and were again frozen south-west of Cape Cockburn, and remained there until the 10th of April, 1854, when Captain M'Clure and his crew proceeded by sledge 180 miles to join the North Star at Beechey Island, which they reached on the 27th.

"On the 26th of August they proceeded in her down Barrow's Straits, across Baffin's Bay, to Disco, on the west coast of Greenland, where Captain M'Clure was transferred, early in September, to the Phœnix, under the command of Captain Inglefield, a very distinguished Arctic navigator, who in another direction had penetrated by Smith's Sound to the 78° 36′ N. degree of latitude. They arrived safe at Cork on the 30th of the same month, having been four years and eight months in effecting a passage between the Great Pacific and Atlantic oceans, performing what has been so graphically described by an American writer of some celebrity, Lieutenant Maury, of the United States' navy, 'That Captain M'Clure and his followers were the first to put a girdle round the great continent of America.

"The evidence places beyond doubt that to Captain M'Clure incontestably belongs the distinguished honour of having been the first to perform the actual passage over water along the northern coast of America, between the two great oceans that encircle the globe. By this achievement he has demonstrated the existence, and traced the course of that connexion between these oceans, which, under the name of the North-west Passage, has so long been the object of perilous search and deep interest to the nations of the civilized world.

"In addition to the completion of a north-west passage, Captain M'Clure and his officers have explored about 2,000 miles of coast line where a blank has hitherto existed in our charts.

"In the accomplishment of this exploit Captain M'Clure exhibited those high qualities of enterprise, heroism, and endurance, which have

indeed been the common characteristics of the brave navigators who have carried the researches of British adventure far beyond the confines of the frozen seas, which at one time seemed inaccessible even to the skill and courage of British seamen. In the discovery of the double passage from the western waters of the Polar Ocean to the strait which Parry had many years ago reached from the east, Captain M'Clure has had the good fortune to complete the last link in the chain of discovery to which many intrepid and persevering enterprises have contributed. Few passages in the history of naval enterprise can command a deeper interest than belongs to the position of Captain M'Clure in the autumn of 1851. In the previous autumn he had penetrated to the northern extremity of Prince of Wales' Strait, a channel discovered by himself, and had reached at its entrance the frozen waters of Parry's Sound. Baffled by the ice in his attempt to force his ship into those waters by that channel, he attempted another course. With almost instinctive sagacity he came to the conclusion that the unknown and unexplored land to the west-ward of the Strait through which he had passed, was an island, and that along its northern coast there must be another passage from the open ocean into Melville Sound. He took the bold resolution to retrace his steps to the south-ward, and attempt to reach the same point by sailing round an unexplored tract of land, and braving the perils of a coast navigation, exposed to the pressure of the Polar Ocean. Your committee have already recorded the verification of his bold conjecture and the successful issue of this daring enterprise. Ample and honourable testimony has also been borne to the intrepidity with which he braved, and the judgment with which he met, the perils which attended his attempt; and your committee cordially unite in the tribute of admiration which this testimony has offered to the combination of prudence and daring which marked his conduct in the adventurous achievement in which he has succeeded.

Discovery of Important Greek Manuscripts.

In the winter of 1847, Mr. Harris was sitting in his boat, under the shade of the well-known sycamore, on the western bank of the Nile, at Thebes, ready to start for Nubia, when an Arab brought him a fragment of a papyrus roll, which he ventured to open sufficiently to ascertain that it was written in the Greek language, and which he bought before proceeding further on his journey. Upon his return to Alexandria, where circumstances were more favourable to the difficult operation of unrolling a fragile papyrus, he discovered that he possessed a fragment of the oration of Hyperides against Demosthenes, in the matter of Harpalus, and also a very small fragment of another oration, the whole written in extremely legible characters, and of a form or fashion which those learned in Greek MSS. consider to be of the time of the Ptolemies. With these interesting fragments of orations of an orator so celebrated as Hyperides, of whose works nothing is extant but a few quotations in other Greek writers, he embarked for England. Upon his arrival here, he submitted the precious relics to the inspection of the Council and Members of the Royal Society of Literature, who were unanimous in their judgment as to the importance and genuineness of the MS.; and Mr. Harris immediately set to work, and with his own hand made a lithographic fac-simile of each piece. Of this performance a few copies were printed and distributed among the *savans* of Europe,—and Mr. Harris returned to Alexandria, whence he has made more than one journey to Thebes in the hope of discovering some other portion of the volume, of which he already had a part. In the same year (1847), another English gentleman, Mr. Joseph Arden, of London, bought at Thebes a papyrus, which he likewise brought to England. Induced by the success of Mr. Harris, Mr. Arden submitted his roll to the skilful and experienced hands of Mr. Hogarth; and upon the completion of the operation of unrolling, the MS. was discovered to be the terminating portion of the very same volume of which Mr. Harris had bought a fragment of the former part in the very same year, and probably of the very same Arabs. No doubt now existed that the volume when entire consisted of a collection of, or a selection, from, the orations of the celebrated Athenian orator Hyperides; and Mr. Arden, with a liberality and energy that cannot be too highly commended, forthwith gave to the world a beautiful fac-simile of his portion of the treasure, edited by the Rev. Churchill Babington; and this is the book to which Mr. Harris alludes in another part of his letter.

The portion of the volume which has fallen into the possession of Mr Arden contains "fifteen continuous columns of the 'Oration for Lycophron,' to which work three of Mr. Harris's fragments appertained; and likewise the 'Oration for Euxenippus, which is quite complete and in beautiful preservation." Whether, as Mr. Babington observes in his Preface to the work, "any more scraps of the 'Oration for Lycophron' or of the 'Oration against Demosthenes' remain to be discovered, either in Thebes or elsewhere, may be doubtful, but is certainly worthy the enquiry of learned travellers." The condition, however, of the fragments obtained by Mr. Harris but too significantly indicate the hopelessness of success. The scroll had evidently been more frequently rolled and unrolled in that particular part—namely, the speech of Hyperides in a matter of such peculiar interest as that involving the honour of the most celebrated orator of antiquity—it had been more read and had been more thumbed by ancient fingers than any other speech in the whole volume; and hence the terrible gap between Mr. Harris's and Mr. Arden's portions. Those who are acquainted with the brittle, friable nature of a roll of papyrus in the dry climate of Thebes, after being buried two thousand years or more, and then coming first into the hands of a ruthless Arab, who, perhaps, had rudely snatched it out of the sarcophagus of the mummied scribe will well understand how dilapidations occur. It frequently happens that a single roll, or possibly an entire box, of such fragile treasures is found in the tomb of some ancient philologist or man of learning, and that the possession is immediately disputed by the company of Arabs who may have embarked on the venture. To settle the dispute, when there is not a scroll for each member of the company, an equitable division is made by dividing a papyrus and distributing the portions. Thus, in this volume of Hyperides, I should conceive that it had fallen into two pieces at the place where it had most usually been opened, and where, alas! it would have been most desirable to have it kept whole; and that the smaller fragments have been lost amid the dust and rubbish of the excavation, while the two extremities have been made distinct properties, which have been sold, as we have seen, to separate collectors. So, at all events, such matters are managed at Thebes.

Mr. Harris mentions fragments of the 'Iliad' which he had purchased of some of the Arab disturbers of the dead in the sacred cemetries of Middle Egypt, most probably Saccara. I should be disposed to differ from the inference that these copies were written in Middle Egypt, or that the copies were found at Thebes were written in Upper Egypt: as I cannot but think it more probable that all Greek manuscripts found in Egypt, in whatsoever part, were written or copied at that great emporium of literature, or the Library of Alexandria, and thence carried into remoter districts by the learned, and, ultimately, as a valuable treasure, buried with them.—*Athenæum.*

JOSEPH BONOMI.

The late Earthquake.

The whole east of France from Valence up to Metz felt very perceptibly the shock of an earthquake which, as has been already mentioned, did some slight damage at Lyons on the 25th at noon. At Grenoble three or four distinct oscillations were felt, which lasted during a period of about 30 seconds. The clock of the cathedral was stopped. At about the same time a strong shock was felt at Lous-le-Saulnier, the oscillations, which followed each other in rapid succession, appearing to be in the direction from east to west. Several of the ceilings of rooms in upper parts of houses were cracked and thrown down. Some minutes before the shocks the cattle on several farms in this neighbourhood were heard to make that peculiar lowing which denotes a fear of approaching danger. The shock at Besancon also lasted for about 30 seconds. The furniture in some rooms was displaced, the bells set ringing, and some ceilings cracked. There was no particular atmospheric sign to announce the phenomenon. The weather wet and stormy, and the barometer above "variable." At Baume, in the Doubs, the shock was violent, several chimneys being partly thrown down and others damaged. At Belvoir, in the same department, the shock, which lasted six seconds, was so violent that the houses were felt to rock. Several chimneys were thrown down here, and many walls were much cracked. The movement was accompanied by a rumbling noise and by a strong smell of sulphur. At Strasbourg the shock was felt in the midst of a violent storm and heavy rain. The clock in the house of the keeper of the cathedral, and situate on the platform of the building, was stopped. The waters in the reservoirs was so agitated as to flow over the edges of the basins. The shock lasted nearly a minute. In the upper part of one of the barracks the soldiers ran out in great haste, imagining the house was about to fall. At

Dijon the shock, which was rather slight, was felt in the direction of north-east to south-west. The accounts received from Italy, Switzerland, and part of Germany agree in stating that the shock extended to all these countries. The time indicated varies from 10 to 20 minutes past 1, but the variation is probably only caused by difference of clocks. Among other places where the shocks where felt were Erbach, in the Odenwald, Carlsruhe, Friburg, the Baden Oberland, Stutgardt, Ravenburg, Esslingen, Plochingen, &c. In most of the places two or three oscillations were felt; they went from the north-east to the south-west, and were strong enough to shake the windows, ring bells, and displace light articles of furniture, but the barometer and thermometer underwent no variation. The sky was cloudy at the time, and the wind blew from the south-west. A letter from Milan of the 25th says:—"A severe shock of earthquake was felt at Milan this day, in the direction of east to west. It lasted five seconds, but caused no damage. Most of the clocks in the town stopped, and the thermometer fell from 27° Reaumur to 14° (93° to 63½° Fahrenheit). The weather was rainy, and on the following morning there was a a thick fog."—*Galignani's Messenger.*

Ship Canal across the Isthmus of Suez.

M. de Lesseps is now on his return from Egypt to Paris, probably to make the necessary arrangements for carrying out the project with which he has been so long occupied, and for which, it is believed, he has at last obtained the consent of the Ottoman Porte, that of the Viceroy of Egypt having been long ago and very readily given. This project is the important one of cutting a ship canal through the Isthmus of Suez, and thus making an expeditious and easy direct passage for ships of large size from the Mediterranean into the Indian seas. The line originally traced out for this canal was from Tineh to Suez, the narrowest point of the Isthmus; but, this, from a congregation of difficulties not then sufficiently studied, and from data and calculations erroneously founded, it was deemed necessary to abandon; the more so as the cost could not be less than 300 millions of francs, whereas that for the canal of greater length now proposed is estimated at no more than 240 millions. The establishment of a canal at the narrowest part of the Isthmus is besides surrounded with such difficulties of execution that the authors of the project now approved of by the Pacha of Egypt have decided in preference of the line by Alexandria and Cairo. The port of Alexandria and the roadstead of Aboukir are exempt from the obstacles to navigation which the Nile creates north-east of the Delta. A current running along shore from west to east carries away from Alexandria the mud brought down by the river, and keeps the waters of this part of Egypt clear and deep. By opening the canal at Alexandria the enterprise is saved the considerable and costly works necessary at Tineh. Canals of communication between the Mediterranean and Indian seas not only existed from the most distant period, but vestiges of them are still found, agreeing with the plan now proposed. There was, however, a very important difference between the ancient canal and that now in question; which is, that the first was almost exclusively devoted to internal navigation, and probably had but little depth of water. The present dimensions of the English ships trading between India and Europe oblige to enlarge the proportions of the projected canal. It is proposed to admit of the passage of large ships of war, and to maintain the necessary depth of water. The difficulty does not consist in the works to be executed for constructing the canal and locks, and for finishing all the other requisites, but in finding the means for feeding the canal to a depth for large ships. After extended surveys it has been found that the water supply cannot so readily be procured from the two seas as had been conceived, and that recourse can be more easily and conveniently had to the waters of the Nile, for that river has been ascertained, contrary to former belief, to have an elevation considerably above that of the sea.—*Civil Engineer and Architects Journal.*

Charcoal as a Deodoriser and Disinfectant.*

There are many substances known to the chemist which are distinguished by possessing what are termed antiseptic properties; that is, they possess the power of checking or impeding decomposition in other bodies; they are, in fact, powerful conservators. There are a few other substances which add to this antiseptic power another still more remarkable: this is the property of absorbing and firmly retaining the fœtid exhalations and products of decomposition, so that an infected atmosphere, or solid or fluid matter, may be rendered sweet and wholesome by their mere contact. The substance which enjoys in the highest degree these conjoined powers, is common charcoal. Perhaps there is not within the range of chemistry a more remarkable instance of the forcible influence which one sort of matter is capable of exerting over another, than is to be found in the action of charcoal upon gaseous bodies of every kind. Under ordinary circumstances, and relatively to mechanical forces, we know that the mere condensation of the permanent gases into a very greatly diminished bulk is a problem not too easy to solve. How extraordinary and powerful must, then, be the attractive force which not only condenses these gases to a most remarkable extent, but which is capable of retaining them for an indefinite period in this state of condensation! It has been ascertained, by experiment, that freshly-burned wood charcoal placed in an atmosphere of either of the following gases will, in the course of twenty-four hours, absorb the quantity stated in the table.

Ammonia	90	Bicarburetted Hydrogen.	35
Muriatic Acid	85	Carbonic Oxide	9·42
Sulphurous Acid	65	Oxygen	9·25
Sulphuretted Hydrogen	55	Nitrogen	7·50
Nitrous Oxide	40	Carburetted Hydrogen	5·00
Carbonic Acid	35	Hydrogen	1·75

The numbers indicate the number of volumes of gas respectively which one volume of charcoal can absorb; but it may be remarked that the extent of the absorptive action increases as the temperature at which the experiment is made diminishes. The action is also not confined to these substances while they are in the free gaseous state; those which are soluble in water are removed in their solution by the same means; so that water contaminated by the gases which arise from rotten vegetable matter is rendered perfectly pure and inodorous by mere filtration through a layer of charcoal, or even by placing a few pieces of fresh charcoal in the vessel containing it. Unlimited experience has shown that the most fœtid substances may be rendered perfectly odourless and innoxious by means of charcoal; and what can be more valuable, in a sanitary point of view—or rather, what may be more valuable, if we chose to avail ourselves of it to the utmost—than the knowledge of this fact? The dangerously unwholesome state of the densely-crowded and populous towns arises from the accumulation of malarious exhalation, in consequence, first, of the overcrowding of the dwellings, and secondly, from the want of proper sewerage and ventilation. If any cheap and ready means could be employed for preventing or destroying these exhalations, how much may be done towards assisting and establishing a complete and effective sanitary reform!

In speaking of the practical application of charcoal to this purpose, we must consider it as possessing the distinct properties both of an *antiseptic* and of a *disinfectant*; and it is in this respect that the use of charcoal is particularly advantageous when compared with that of the chemical agents which may be employed for a similar purpose. In an infected atmosphere it is well known that provisions are more prone to run into a state of decomposition than when the air around them is fresh and pure. It is, therefore, difficult to preserve either solid food, or even water, in a state fit for human consumption, where the atmosphere is charged with a poisonous effluvia, as is so often the case in dwellings of a certain class. Under such circumstances, what a valuable sanitary agent charcoal may be rendered by virtue of its *antiseptic* properties! Meat, fish, or any matter readily obnoxious to decay, may be preserved for a very considerable time if kept surrounded with pieces of charcoal; and even if incipient decomposition be established, it may, in a similar manner, be immediately checked, and the material rendered wholesome and fit for food. As a *disinfectant*, charcoal is even more effective. The admixture of charcoal in powder with the contents of cesspools or sewers will wholly deprive them of odour; the most fœtid sewage liquor, mixed with a little charcoal powder, and afterwards filtered to remove the solid matter, could not be distinguished from the purest water, either by appearance or smell. It is the same with the soil from cesspools: after being mixed with a proper quantity of charcoal, every trace of mal-odour is removed, and the mixture may be transported from place to place without the least offence against public convenience or prejudice to the public health. The mere scattering of a layer of the powdered charcoal over the surface of soil effectually prevents the effluvia from escaping, and, undoubtedly, the exposure of a considerable surface of the same material, in shallow trays, for instance, would in a great measure, if not entirely, purify the infected atmosphere of ill-ventilated dwellings.

*London Artizan. See also *Canadian Journal*, Vol. III., p. 196.

The powerful action of charcoal upon gases and vapours is not limited to them; it extends to many organic principles, as, for instance, the colouring matter of vegetable infusions, and even to the principles upon which the peculiar flavor of certain vegetable matters depends, such as the intense bitter of gentian and quassia. What renders this action the more remarkable, is the fact that it appears to be entirely independent of ordinary chemical action. The charcoal effects no change in the matters over which its influence is exerted—it merely seizes upon them by virtue of some powerful surface attraction; but any substances thus retained by charcoal can be easily re-obtained in their normal character by the employment of certain chemical means. Neither is the disinfectant property confined to any particular kind of charcoal. That obtained from the various bituminous minerals appears to act as well as that from wood, but the charcoal from peat is perhaps the most suitable to sanitary purposes. An excellent charcoal may be manufactured from spent tan; and in the neighbourhood of large towns, many refuse matters may easily be burned into a material which will operate extremely well as a disinfectant.

In France this substance has been largely employed for the last fifteen years as an adjunct to sanitary purposes, in the purification of water. It affords a ready means of effecting the latter; and it is greatly to be desired that its excellent properties, both in this respect and as a disinfectant, should become generally known.

Marine Losses on the Lakes in 1854.

The following tables show the cause of disaster, amount of loss, and character of vessel, in 1854.

The disasters for the several months compare in number as follows:

Months.	No. in 1852.	No. in 1853.	No. in 1854.	Amount in 1854.
April	7	19	48	$320,900
May	19	30	27	217,000
June	24	17	11	40,900
July	15	11	13	58,921
August	16	28	21	68,000
September	21	30	40	129,000
October	27	39	66	408,000
November	85	80	84	456,000
December	15	12	68	490,000
	229	268	384	$2,186,921

Causes.	Steam Vessels. No.	Steam Vessels. Loss.	Sail Vessels. No.	Sail Vessels. Loss.	Total. No.	Total. Loss.
Wrecked and sunk.	9	$480,000	51	$509,626	60	$787,626
Fire	4	240,000	2	22,500	6	262,500
Stranded	2	110,000	51	507,626	2	110,000
Damaged, &c.	54	140,300	198	321,375	252	461,675
Jettison	8	72,000	22	36,770	30	108,770
Collisions	16	100,700	18	155,650	34	256,350
Total	93	$1,143,000	291	$1,043,991	384	$2,186,921

RECAPITULATION.

	No.	Loss.
Steamers	41	$463,400
Propellers	52	679,500
Barks	17	148,000
Brigs	55	184,125
Schooners, &c.	219	711,796
Total loss		$2,186,921

The proportion of losses on each of the four large Lakes traversed by the shipping is shown by the following figures for the past three years:—

	1852.	1853.	1854.
Ontario	$ 78,939	$288,077	$ 246,300
Erie	741,300	250,512	1,113,271
Huron	89,600	161,368	411,500
Michigan	78,820	212,316	397,950

The proportion of steam to sail craft by which losses occurred during the last seven years is shown by the annexed table.

Years.	Steam.	Sail.	Total.
1848	$140,000	$280,512	$420,512
1849	185,900	182,271	368,171
1850	281,700	277,126	558,826
1851	348,700	381,837	730,537
1852	635,620	359,039	994,659
1853	461,800	412,343	874,143
1854	1,143,000	1,043,991	2,186,921

The loss of life attending the disasters of 1854, is stated at 119, of which 18 were on Lake Ontario, 40 on Lake Erie, 12 on Lake Huron, and 49 on Lake Michigan. The loss of life for the series of seven years, compare as shown by the figures below:

1848	55
1849	34
1850	395
1851	79
1852	296
1853	81
1854	119

The nature and causes of the disasters which resulted in these losses during the last three years, compare as follows—

Causes.	1852.	1853.	1854.
Wrecked and sunk	$780,709	$608,871	$987,626
Fire	.....	132,055	262,500
Stranded	.....	.....	110,000
Damaged &c.	.....	.....	461,675
Jettison	.....	.....	108,770
Collisions	261,950	55,823	256,350
Explosions	.....	77,394	.....

Manufacture of Paper.

During the recent discussion on the Fibre Company's Bill in the House of Lords, the Earl of Hardwicke stated some interesting facts bearing upon the great paper question. The substance of the noble Earl's remarks were as follows:—

It was well known that the supply of paper had fallen off as the desire for its use had been extended. The result was an enormous increase in its price, and the Government revenue had fallen off in consequence of the diminished supply of the raw material from which it was manufactured. The attention of men of science had been directed to the subject, and rewards had been offered for such an improvement in the manufacture as would increase the supply of raw material. The machines requisite for reducing the raw material to pulp were, however, very expensive, and required a great deal of capital. The war with Russia had diminished the supply of hemp, and flax, from which the article was partly produced. The efficacy of the plan of this company had been tested, as he had explained on a former occasion, when he had shown their lordships a copy of the *Times* newspaper made from pulp of a material manufactured as this company proposed to manufacture it. The invention was thus shown to be excessively useful and the paper sufficiently good for all the purposes for which it was made. In the five years from 1830 to 1834 the amount of paper manufactured in Great Britain was on an average 70,988,131 lb., while in the five years from 1849 to 1853 the average annual quantity produced had risen to 151,284,175lb. In the year 1853 the production was 177,633,000 lb., being above 23,000,000lb., or 10,000 tons more than the preceding year. Taking into account the higher price of paper-making materials, it was estimated that the cost of production to our own manufacturers during the present year would exceed that which the same weight of paper would have cost in 1852 by no less a sum than £1,000,000 sterling. While an increasing quantity was still desired the price of the raw material continued to increase, and had risen from 26s. per cwt. first quality in 1852 to 34s. in 1854. The state of the European markets with regard to the supply of the raw material was equally lamentable, there being an increased demand in those countries as well as here. There was some statistics upon the consumption of paper by the *Times* which might interest their lordships. The *Times* published 60,000 copies of that paper daily. The weight of the paper upon which it was printed was nine tons per day, and if the copies were spread upon a flat surface they would make a column of 50 feet in height. In 1851, 1852, and 1853 there were imported from Russia 152,759 tons of hemp. The average supply being 50,920 tons per annum, and the supply from all other parts of the world being only 21,000 tons. The supply from Russia, it was true, was not entirely cut off by the war, but the cost had been greatly enhanced. The result was that 119,118 tons was the amount of deficiency in the material existing at the present moment.

Specification of the Patent

Granted to JAMES A. CUTTING, *of Boston, in the United States of America, Photographer, for an Improved Process of taking Photographic Pictures upon Glass, and also of Beautifying and Preserving the same.*

[Dated London, July 26, 1854.]*

This invention consists in an improved process of taking photographic pictures upon glass, and also of beautifying and preserving the same, which process I have styled "Ambrotype." My improved process has reference to the art of taking pictures photographically on a film of collodion upon the surface of a sheet of glass, the collodion being suitably prepared for the purpose. By the use of the said process, the beauty and permanency of such pictures are greatly increased, and I have, on this account, styled the process "ambrotype," from the Greek word ambrotos, immortal.

The first part of my invention consists in the use of alcohol, for the purpose of depriving the gun-cotton, of which the collodion is made, of its moisture after it has been washed, to free it from the acids used in its manufacture.

It has been found that where the gun-cotton has been exposed to the action of the atmosphere for the purpose of drying it, the sensitiveness of the collodion prepared from it is sensibly diminished. By the use of alcohol it may be deprived of its moisture after being washed, without exposure to the air, and without the consequent deterioration of its sensitiveness. This part of my process I conduct as follows—So soon as the cotton has been sufficiently exposed to the acids, and has been thoroughly washed, it is plunged into strong alcohol, which effectually deprives it of the water which it contains, without exposing it to the atmosphere for the purpose. From this alcohol it is taken immediately to the mixture in which it is to be dissolved for the purpose of forming the collodion. This mixture consists of ten parts of sulphuric ether and six of alcohol, or thereabouts. The collodion thus formed is allowed to remain until it has settled perfectly clear, which usually requires about twenty-four hours. It is then decanted, and to every pint is added eighty grains of iodide of potassium dissolved in alcohol. It is then well shaken, and thirty-two grains of refined gum camphor is added to each pint of the collodion, and after it is again settled it is fit for use. The object of the camphor is to increase the vigour and distinctiveness of delineation of the positive pictures, and particularly of the half tints. It also greatly increases the beauty of the picture, by giving a fineness of deposit not heretofore attained by any other means. The use of the gum camphor in the manner above described forms the second branch of my invention. The collodion is then applied to the surface of the glass in the following manner:—

The plate of glass being held horizontally, a portion of the collodion is poured upon it, and it is then inclined in different directions, so as to cause the collodion to flow over its whole surface, upon which it forms a colorless transparent film; the excess of collodion is then allowed to run off, and the glass, being still held horizontally, is inclined to one side and the other, until the collodion becomes partially thickened or set. When this has taken place, and before it is dry, it is rinsed in a solution of crystallized nitrate of silver, of a strength of forty grains to the ounce of water; the film is thus impregnated with iodide of silver, and after remaining in this bath a sufficient length of time for the ether to escape from the collodion, the plate is ready to be placed in the camera. After being exposed a sufficient length of time in the camera, it is taken to a dark room, where the latent picture is developed, by the application of a solution of protosulphite of iron, acetic acid, and nitric acid, in about the following proportions:—One quart of soft water, one ounce protosulphite of iron, thirty-two drms. No. 8 acetic acid, one drachm nitric acid. These exact proportions are not rigid, but I have found them to be sufficient for the purpose of developing the picture. After this is accomplished, it is washed in clean soft water, and then the remaining iodide of silver is dissolved from the collodion film by a solution of hyposulphite of soda, after which the picture is entirely cleansed by the hyposulphite solution by washing as before, in soft water. The picture is then dried, either in the open air, or by the aid of a gentle heat, and the process is completed.

To permanently improve the beauty of the pictures, and to deprive them of a bluish, hazy, and indistinct look, is the object of my third improvement; which consists in the application of a coating of balsam of fir to the surface of the glass upon which the picture is made, the balsam being confined to the picture plate by a secondary plate of glass, which is applied to the picture plate in a manner which will now be described, and which hermetically seals up the picture and protects it from every and any injury not sufficient to fracture the glasses themselves. This part of the process will now be described.

A second plate of glass is prepared, of the same size as that which carries the picture, and is thoroughly cleansed; the picture plate is then held horizontally, the picture side uppermost. The balsam is then applied in a line along one edge of the glass, and one edge of the secondary plate is then applied to the edge of the first, which contains the balsam. The two plates are then pressed gradually together, by which the balsam is caused to flow entirely across the picture towards the opposite edge, and the air is effectually excluded from between the plates. The superabundant balsam is then removed by pressing the glasses together, and a thin coating of it only is left upon the surface of the picture. The beauty and distinctness of the pictures are greatly enhanced by this application, the finer lines as well as the dark portions and shadows being rendered far more distinct, and the most minute delineations being brought out and made visible, while the application of the second plate of glass secures the whole from the action of of air, moisture, and dust.

What I claim for my invention is,

1st. The method of depriving the gun-cotton of its moisture by the use of alcohol, whereby the sensitiveness of the collodion prepared therefrom is preserved unimpaired.

2d. The use of gum camphor in the preparation of collodion for the purpose set forth.

3d. I am aware of the previous use of balsam for the purpose of cementing together lenses, and also of securing microscopic objects, and I therefore lay claim to no such use.

But what I do claim, is the application of the balsam to the surface of photographic pictures upon glass in combination with the method described of protecting and securing the same by means of the additional plate of glass.

* From the Repertory of Patent Inventions, April, 1855.

Professor Owen on the Social position and rewards of Scientific merit in England.

At the annual dinner of the Society of Arts, which recently took place at the close of the one hundred and first Session of that important British association, Professor Owen touched upon a topic of great and increasing interest, viz.: the social position, national relations, recognition and rewards of scientific merit in the British Isles.

"What these were of old—how they were once viewed—we see in the provisions made in mediæval times for the ease dignity and independence of such master-minds as might achieve the higher posts at our Universities, such positions, for example, as the Deanery of Christchurch, Oxford, the Mastership of Trinity College, Cambridge, which the wisdom of our ancestors established for those men who won renown in the sciences, which alone were recognised in the time of the foundation of those and the like independent and dignified offices. The human intellect has since extended its conquests over a wider range and different fields; more congenial, perhaps, to its true aims and powers than the scholastical, logical, and theological studies which represented science before Galileo and Bacon. Has England continued to cherish and foster in the same spirit the new and fruitful Natural Sciences, as she honoured herself and manifested her wisdom by doing, in relation to the older forms of human knowledge? What, for instance, at the present period of her unexampled wealth, due mainly to the application of the abstract discoveries of science—what is the national relation of her Faraday? What is my own? Are we labouring, lecturing, in national institutions, in fixed positions, absolutely exempt from the annoyance of individual interference or caprice, in the peace-giving certitude of the continuance of hardly-earned emoluments, with the cheering conviction of a suitable retiring provision when the wearied brain begins to fail in its wonted and expected efforts? As working men in our line, with bread to earn by the work we do, England owns us not; she ignores us in the sense in which she recognised and provided for her mediæval teachers. We are merely the servants of particular chartered bodies. As a comparative anatomist, indeed, I deem myself fortunate among my fellow-workers in the place I hold, but it needs only that a majority of the Council of the College of Surgeons should so will and vote it, and after nigh 30 years' service I must begin the world afresh. My masters are irresponsible, or only remotely responsible, to public opinion. Hitherto England has devised no other or better position for the man whom she may delight to ho-

nour by calling "her Cuvier," than the curatorship of a museum belonging to one section of the medical profession. In my own case, indeed, the Council of the Surgeon's College have done me the honour to re-elect me annually, for some years past, to a professorship not previously held by the curator of their museum. But this position has none of that fixedness and independence which my brother professors of the same science on the Continent enjoy. When the First Consul of France revised the appointments and position of the professors in the national establishment of the Garden of Plants at Paris, the salary which he attached to the chair of comparative anatomy, with which the secretaryship of the sciences, was then associated, the appointment, I say, was on such a scale, that the finance minister remonstrated. "Cuvier," replied Napoleon, "has a position in science; it is for the honour of France that he should be able to maintain that position towards the foreign *savans* who may visit Paris." Great is the pleasure with which I can state, that the short-comings of our national arrangements for analagous cases have been well understood by the most illustrious personages and individuals of the State, who have generously endeavoured to remedy and compensate for them. The noble lord at the head of foreign affairs, in the most handsome terms, gave my son a clerkship in his office. Sir Robert Peel in assigning to me, a short time before his lamented death, a pension of £200 a year, well appreciated the acceptability of such a provision in the exemption from anxiety flowing therefrom. I shall never cease to gratefully cherish the memory of the wise and benevolent statesmen, who created for me the satisfaction of feeling that, whatever might possibly cause a termination of my present appointments, I do not thereby fall into utter destitution. Her most gracious Majesty, measuring my humble merits by the standard of her own greatness of mind, was pleased to offer me, as a residence, the mansion of the late King of Hanover, at Kew. On my respectfully representing to her illustrious consort, your gifted and philosophic president, the disproportion of my means to the fruition of that royal gift, he was pleased to suggest the assignment to my use of a beautiful cottage, in which the most healthful and delightful hours of my life have been spent, and which daily renews a grateful sense of the happiness and privilege we enjoy in the benign reign of Victoria."

Cedar from Canada.

In a letter to the Editor of the Journal of the Society of Arts, Mr. W. B. Adams, makes the following observations on a remarkable kind of Cedar from Canada.—

"In the arsenal at Woolwich is being consumed for all kinds of common purposes, as purchased at a common price, a wood of very remarkable quality. It is a cedar of the usual colour and odour, but of a grain and veining equal to the finest maple. I was informed that it comes from Canada amongst the usual supplies. I never recollect to have seen it in Canada, where very durable post and rail fences are made of common straight-grained (pencil) cedar. Perhaps it might have been shown in the Great Exhibition, but if so I did not remark it. Possibly some of your correspondents, either here or in Canada, may give us the information, and make this wood known for the purposes it is better fitted for in the elegancies of life. The Temple of Soloman in all its glory could have had no more beautiful cedar than this, supposing the temple cedar to have been red and not white, as the modern cedars of Lebanon."

It almost makes one think that trees have faculties like the higher classes of human beings to grow like by proximity. This cedar looks as though it had been dry-nursed by a maple, and had caught its manners and features while preserving its own complexion.

Natural History Society of Montreal.

An ordinary meeting of this Society was held in the Museum, on Monday evening, August 27th. There were present—the Rev. Canon Leach, D.C.L., Professor W. Andrew, Dr. Workman, Dr. Wright, Dr. Fraser, Dr. Hingston, Dr. M'Callum, Messrs. G. Browne, J. T. Dutton, and A. W. Rennie. Professor Andrew in the chair.

The following donations were received, and the thanks of the Society ordered to be conveyed to the respective donors:—

From Dr. W. Newcomb, of Albany, New York, a very valuable donation of a complete suite of the Genus *Achatinella*, consisting of seventy-seven different specimens of shells, labelled and numbered, with printed catalogue and description, which a residence of over five years in the Sandwich Islands enabled him to furnish.

From John M'Gee, Esq., of Melbourne, C.W., six specimens of minerals.

From the Smithsonian Institution of Washington, the seventh volume of their contributions to knowledge.

From W. Bristow, Esq., of Montreal, a specimen of Silurian limestone, with fossils.

From Wm. Hutton, Esq., Secretary to the Board of Statistics, &c., Quebec, the Census Volumes, 1st and 2d, in English and French; Trade and Navigation Returns for 1854; Outlines of Flemish Husbandry; Lord Elgin's State Resources of Canada; Report of Public Works for 1853; and Hogan's Prize Essay.

From A. N. Rennie, Esq., six specimens of copper ore.

Dr. Wright read a communication from Dr. Holmes, to the effect, that he was desirous to have withdrawn from his custody some scientific apparatus belonging to the Society, which had been purchased by the proceeds of a course of lectures delivered by him many years ago on Mineralogy and Chemistry. The cabinet keeper was instructed to receive the same when the proposed alterations in the rooms were completed, and officially acknowledge their receipt.

A report from the Council was read, recommending that the plans submitted by George Browne, Esq., for altering and improving the Society's building should be adopted, and that the meeting authorize the Council to borrow upon the security of the Corporation whatever amount might be necessary to complete the same. Mr. Browne stated that the roof of the house was in want of some necessary repairs immediately, and explained the improvements he proposed to make, by the enlargement of the Council room and Library of the Society. He also informed the meeting that at a very trifling expense, a very large and commodious lecture-room could be made on the third floor of the Society's building, and mentioned the amount he thought it would be necessary to raise, to effect these desirable alterations. Whereupon, it was resolved, upon motion by Dr. Workman, seconded by Mr. Dutton—That the plan and estimate respecting the repairs of the Library and Council room be received and adopted. Upon motion by Dr. Fraser, seconded by Rev. Canon Leach,—That Mr. Browne be authorized to have the necessary repairs for rendering the Society's building wind and water-tight, executed immediately. Upon motion by Dr. McCallum, seconded by Mr. Rennie,—That the alterations in the building, necessary to give the Society a large and commodious lecture room be approved of, and that Mr. Browne be authorized to draw up the plans, and procure the necessary estimates. And upon motion by Dr. Hingston, seconded by Mr. Rennie,—That the Treasurer be authorized to borrow, upon the security of the Society, a sum not exceeding four hundred pounds currency, to carry out the alterations and improvements now agreed to be made, according to the plan and specifications submitted by Mr. Browne.

The Librarian presented a list of books of reference, not to be taken out of the Library save for a special purpose, and upon application of the Librarian to the Council for permission. The list was sanctioned, ordered to be printed, and hung up in a conspicuous part of the Library.

Dr. Robert. Craik, of Montreal, was then proposed as an ordinary member; and the meeting adjourned.

(A true copy.) A. W. RENNIE,

Montreal, August 31st, 1855. *Recording Secretary.*

Miscellaneous Intelligence.

ADULTERATION OF OILS.—The detection of oils obtained from the cruciferous vegetables, such as colza, rape, camelina, mustard, when mixed with other oils, has hitherto been a matter of some difficulty. The following test is proposed by Miahle:—25 to 35 grammes of the oil in question are boiled in a porcelain capsule, with two grammes of pure caustic potash (prepared with alcohol) dissolved in 20 grammes of distilled water. After boiling for a few minutes, it is thrown upon a filter previously moistened, and the alkaline liquor flowing from it is tested with paper impregnated with acetate of lead or nitrate of silver. A black stain, showing the presence of sulphur, indicates that one of the above oils has been added. A still more delicate method is to boil the mixture in a silver capsule, which will be blackened if one of the above oils be present even to the proportion of one per cent.—*Artizan.*

COPPER COINAGE.—In 1844, Sir J. Morrison estimated the weight of the copper coins of this country to be 5,000 tons. In the past year alone, there were added 270 tons, forming above 25 million of single pieces, viz., 6,800,000 pennies, 12,400,000 halfpennies, and 6,500,000 farthings, copper coinage.

OIL AND ALCOHOL.—A letter from Algiers, of the 15th inst., says that M. Duplat, a chemist attached to the military hospital at Blidah, had succeeded in producing oil and alcohol by distillation from acorns growing in the oak forests which cover Mount Atlas. One hundred pounds weight of acorns produced half-a-pound of oil and five pounds of alcohol, perfectly suited for chemical purposes.—*Times Paris Correspondent.*

STEAM FIRE-ENGINES.—The *Cincinnati Commercial* contains the report of a Committee of citizens to witness the performances of a new steam fire-engine, named "Young America," and built in the machine shop of Abel Shawk, and according to his patent. In this report it is stated, that in twelve minutes exactly, from applying the match, the engine commenced its work, and the pumping of water began. The first experiment was made by using a nozzle 1⅛ inches in diameter, playing horizontally, the water being thrown 210 feet. The next experiment was with a nozzle 1¼ inches in diameter, in the same direction. Upon actual measurement, it was found that the water had been fairly thrown a distance of *two hundred and twenty-nine feet and four inches.* It also forced a stream of water through the 1¼ inch nozzle ten feet over the tower of the Mechanics' Institute, 160 feet high; and had the wind not been so strong, it would have thrown the stream higher still. The Committee, after a number of experiments, unhesitatingly declared, they were perfectly satisfied, and considered the engine a triumph of which Cincinnati might be proud.

TELEGRAPH TO INDIA.—The remainder of the submarine telegraph cable required to complete the communication to Algiers *via* Corsica and Sardinia has just been shipped from the manufactory at Greenwich. It is 162 miles in length, containing six conducting wires, and weighing 1,250, tons. It will be laid from the southernmost point of Sardinia to the coast of Africa, near Algiers, and is regarded by the parties connected with the undertaking as the commencement of a line to India and Australia, *via* Malta, originally projected by them.

From Cape Spartivento the company proposes to go to Malta, and, arrived there, to stretch one line of telegraph by Corfu across the isthmus of Greece to Constantinople, and another by Alexandria, Suez, Aden, and the coast of Arabia to Kurachee, where communication with the Indian system will be established. For the completion of this extensive route not more than 1,000,000*l.* of capital would be required, and it is confidently asserted that the whole might be finished in two years and a-half.

IMPORTANT DISCOVERY.—It was stated a few days since by Sir Walter C. Trevelyan, at a meeting of the Somerset Archæological Society, of which he is President, that a discovery had been made in the Brendon-hills, Somerset, of a vast quantity of carbonate of iron. This metal has heretofore been obtained chiefly from Silesia, and is used for the manufacture of steel. The size of the vein in these hills is said to far exceed that in the continental mines, and the discovery promises to be of great value, the amount annually expended in the purchase of this description of iron being about three quarters of a million sterling.

CANADIAN TELEGRAPH COMPANIES.—There are three Telegraph Companies, whose wires extend throughout the Province, viz.: the Montreal Telegraph, the British American Telegraph, and the Grand Trunk Telegraph Companies. The office of the first is in the Montreal Exchange, and its wires work direct to every important town in Canada, to Portland and all intermediate stations on the Grand Trunk Railway, to Boston by two distinct lines, to New York via Troy (the only direct route) and connect with lines to all parts of the United States and the Eastern Provinces. The British American Telegraph Company, office, St. Francois Xavier Street. This line runs from Quebec to Halifax direct, and to all ports below Quebec. Its wire also extends to Montreal and connects with the Grand Trunk Telegraph wires in this city,—these latter having connection with every town and village of any importance between Montreal and Buffalo. The average charge of messages is about 8d. currency for 10 words per 100 miles.—*Canadian Railway and Steamboat Guide.*

SUSPENSION BRIDGE OVER THE DNIEPER AT KIEFF.—There is in the gallery at the Crystal Palace a beautiful model of the suspension bridge erected by our countryman and engineer, Vignolles, over the Dnieper, at Kieff, for the Emperor of Russia. It is on a scale of 1 inch to 8 feet, was constructed by Mr. Jabez James, Broadwall, Lambeth, and assistants, and is a perfect representation, even in its most minute details, of the original. This bridge is 2562 ft., or nearly half a mile in length, 52½ ft. wide, each of the four openings between the piers, 440 ft., and two side openings 225 ft. each. A swivel bridge at one end for the passage of ships, is 50 ft. clear in the opening; the water way at highest floods 2140 feet. The test load was 3000 tons, and it is calculated to bear 2350 tons. The clear height from the foundations of the piers is 112 feet. It was commenced on Sept. 9, 1848, and opened Oct. 10, 1853.

IMMIGRATION INTO CANADA.—The annual returns of the immigration into Canada during the past year have just been published, and show a large increase, the total from the united kingdom and the continent of Europe having been 53,183, against 36,699 in 1853. The average length of the passage from the united kingdom was 47 days, and from continental ports 58 days. By the steamers from Liverpool it was 16 days. Since 1851 the emigration from Ireland to Canada has shown a great excess of females over males, the result, probably of men who have succeeded well in the colony having sent remittances for their relatives to join them. Last year the excess was 2,209 women, being double that of the previous year. Three vessels were lost during the season, but without any sacrifice of life. Scarcely any complaints were made of infringements of the Passenger Act, but some defects of that Act were rendered apparent, which call for remedy. The chief of these is the system of issuing the provisions in an uncooked state, the struggle for the use of the stoves leading to violence and oppression on the part of the strong over the weak and timid. Of the total 53,183 immigrants, 35,132 were of British origin, the remaining 18,051 being foreigners. Of these 14,000 British and 8,000 foreigners passed through to the United States, and the number that remained as permanent settlers in Canada was therefore 31,183. In addition there was an accession of 6,000 or 7,000 to the population of the province by persons arriving from the United States. The disposition to settle permanently in Canada is stated to have been stronger than at any former period. This is attributed partly to the depressed condition of business in the United States and partly to the effects of the Know-Nothing movement against foreigners. A body of 50 or 60 Norwegians, who have settled near Sherbrooke, are regarded as very valuable colonists, and a strong hope is entertained that they may be the means of attracting further arrivals.

PROTECTION OF IRON FROM OXIDATION.—M. Paris has discovered a vitreous enamel, which will stand the test of any chemical or physical action to which it may be subjected. Some experiments fully prove that the adherence is perfect, and that the enamel resists the most *violent shocks* without cracking, although the iron it covers may be completely bent; it does not peel off or take fire by the action of heat; and concentrated acids can be kept at the boiling point for a considerable period in vessels protected by it. These qualities will enable the use of iron, where glass, silver, gold, or platina has only hitherto been employed. It is also proposed to apply the invention more especially to the lining of water and gas pipes, covering roofs, and sheathing ships, anchors, &c.—*Mining Journal.*

ERRATA.—Page 325—third line from bottom of first column—for "Vetutinus," read "Velutinus."

Page 325—second column, line 16—for "Thumb," read "Thunb."

Monthly Meteorological Register, at the Provincial Magnetical Observatory, Toronto, Canada West.—July, 1855.

Latitude, 43 deg. 39.4 min. North. Longitude, 79 deg 21. min. West. Elevation above Lake Ontario, 108 feet.

Day.	Barom. at temp. of 32 deg. 6 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Mean Temp. + or − of the Average	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N	Humid'y of Air. 6 A.M.	2 P.M.	10 P.M.	M'N	Wind. 6 A.M.	2 P.M.	10 P.M.	Mean Direct.	Mean Vel'y	Rain in Inch.
					°	°	°	°	°														
1	29·448	29·337	—	—	70·7	79·1	—	—	—	0·584	0·657	—	—	·81	·68	—	—	S S W	S W b S	S S W	S 15 W	9·24	...
2	·392	·481	29·663	29·529	62·2	73·7	58·7	65·3	+ 0·3	·454	·449	·390	·433	83	56	·81	·76	S S W	S S W	N W b W	W 9 S	11·37	...
3	·760	·717	·536	·661	58·9	63·2	56·8	60·2	— 4·9	·398	·394	·399	·386	82	70	89	77	Calm	E b S	E N E	E 6 N	8·79	...
4	·454	·418	·525	·475	62·3	74·5	66·8	68·2	+ 2·9	·482	·549	·615	·511	88	67	81	76	E b N	S S W	N W b W	W 15 S	8·69	0·005
5	·688	·743	·776	·733	59·7	68·6	60·2	62·3	— 3·1	·387	·482	·444	·413	77	71	87	76	W b N	S b W	S S W	S 19 W	6·41	...
6	·713	·677	·675	·686	59·7	72·0	59·9	64·3	— 1·4	·420	·480	·375	·422	84	63	74	71	Calm.	S b E	N N W	N 16 W	6·55	...
7	·724	·744	·803	·758	56·0	68·0	54·2	59·9	— 5·8	·364	·394	·307	·336	83	59	74	67	N b W	S b W	N W b N	N 42 W	8·97	...
8	·815	·833	—	—	56·3	67·6	—	—	—	·338	·418	—	—	76	63	—	—	W N W	S S E	S S E	S 34 E	5·92	...
9	·759	·606	·509	·616	60·3	71·4	63·9	64·9	— 1·1	·472	·467	·487	·471	92	62	84	79	N E	S b E	S b W	E 9 S	8·01	·010
10	·527	·547	·623	·570	69·8	75·9	59·3	68·0	+ 1·9	·574	·575	·379	·488	81	67	77	73	N W	S b W	W b S	W 28 N	5·82	...
11	·612	·523	·497	·533	61·7	76·6	65·9	68·6	+ 2·5	·423	·556	·502	·496	78	62	81	73	W N W	S b E	S b W	S 25 W	5·49	Inap.
12	·481	·407	·386	·427	63·9	74·3	68 6	68·4	+ 2·1	·498	·614	·555	·554	86	74	82	82	S S W	S S E	E b N	S 15 W	4·07	·410
13	·385	·426	·525	·449	62·5	66·6	59·2	62·9	— 3·5	·511	·524	·362	·459	93	83	74	82	Calm.	S	N b W	N 36 W	6·27	·255
14	·625	·657	·653	·644	60·3	72·0	60·8	64·5	— 1·9	·382	·359	·333	·363	75	47	64	62	E S E	S	N E b E	S 41 E	5·05	...
15	·668	·698	—	—	64·3	75·0	—	—	—	·461	·605	—	—	78	72	—	—	N E b E	E b S	S S W	E 8 S	5·09	...
16	·764	·741	·729	·742	72·4	82·1	71·8	76·1	+ 9·5	·648	·711	·639	·675	84	67	84	78	N N W	S b W	S W	S 26 W	9·11	...
17	·711	·671	·695	·688	74·5	87·2	74·9	78·8	+12·1	·701	·700	·692	·689	85	56	83	74	S W b W	W b S	N E W	W 12 S	5·98	...
18	·723	·629	·532	·616	69·6	84·3	74·5	76·5	+ 9·8	·666	·762	·711	·713	95	67	87	81	Calm	S	S S W	S 19 W	8·41	...
19	·480	·427	·537	·492	75·9	88·4	72·1	79·4	+12·7	·751	·709	·559	·675	87	55	73	70	S W b W	W	N b W	W 28 S	13·08	·295
20	·700	·750	·744	·723	59·9	61·2	59·7	60·7	— 6·1	·487	·422	·410	·428	90	80	82	83	N E	E N E	N b W	N 28 E	6·17	·090
21	·754	·778	·774	·768	59·4	65·0	56·9	60·6	— 6·1	·427	·395	·342	·396	86	66	75	77	N b E	E	N N E	E 32 N	8·41	
22	·775	·731	—	—	61·7	65·6	—	—	—	·466	·478	—	—	87	78	—	—	N E	E	N E b E	E 16 N	6·20	·035
23	·721	·695	·721	·712	60·7	71·0	62·0	64·9	— 2·0	·465	·520	·496	·511	89	76	91	86	N N E	S E	N E	E 2 S	4·55	·325
24	·706	·646	·654	·669	62·7	69·2	62·5	64·9	— 1·9	·478	·565	·513	·533	86	81	93	89	N N E	E N E	Calm	E 21 N	4·13	·065
25	·668	·670	·646	·661	66·9	71·8	67·5	68·7	+ 1·7	·584	·568	·596	·592	92	75	91	87	N	E S E	Calm	S 40 E	2·45	1·205
26	·594	·517	·513	·540	67·2	76·3	68·6	70·3	+ 3·4	·607	·749	·650	·662	93	85	97	92	N E b E	S b E	E b S	S 34 E	2·49	Inap.
27	·515	·451	·379	·454	70·4	79·5	70·5	73·4	+ 6·4	·603	·769	·652	·690	94	78	90	86	N b E	S b E	N E b E	S 43 E	6·63	·315
28	·387	·470	·513	·459	69·3	74·4	71·1	73·0	+ 6·0	·650	·733	·640	·665	91	89	86	85	S	N W b N	N W b W	W 2 S	4·23	·195
29	·575	·611	—	—	69·3	79·0	—	—	—	·597	·711	—	—	86	74	—	—	N W b N	S	E N E	N 26 E	5·33	·040
30	·623	·606	·619	·612	68·9	76·1	66·4	70·2	+ 3·2	·655	·675	·557	·622	96	77	89	87	N	S S E	N	E 24 S	4·00	...
31	·641	·683	·677	·672	67·1	74·9	63·6	71·6	+ 4·6	·575	·725	·511	·598	90	87	75	79	N E b E	S E b S	N N E	E 20 N	3·67	...
M	29·619	29·603	29·612	29·611	64·7	73·8	64·7	67·9	+ 1·7	0·525	0·571	0·504	0·530	·87	·70	·82	·7	4·33	9·23	5·14	S 19 W	6·47	3·245

Highest Barometer..... 29·833, *at* 2 p.m. *on* 8th } Monthly range:
Lowest Barometer..... 29·337, at 2 p.m. on 1st } 0·496 inches.

Highest registered temperature 92°·8, at p.m., 19th } Monthly range:
Lowest registered temperature 49°·2, at a.m. on 8th } 43°·6.

Mean Maximum Thermometer..... 76°·75 } Mean daily range:
Mean Minimum Thermometer..... ..... 60°·05 } 16.70

Greatest daily range.....38°·0, from p.m. of 19th to a.m. of 20th.
Least daily range .....6°·2, from p.m. of 20th, to a.m. of 21st.

Warmest day..... 19th. Mean temperature.....79°·45 } Difference,
Coldest day..... 7th. Mean temperature.....59°·93 } 19°·52.

Greatest intensity of Solar Radiation, 108°·5 on p.m. of 19th } Range,
Lowest point of Terrestrial Radiation, 40°·2 on a. m. of 14th } 68°·3.

Aurora observed on 2 nights: viz. on 19th and 21st.
Possible to see Aurora on 19 nights. Impossible on 12 nights.
Raining on 13 days. Raining 36·6 hours: depth, 3·245 inches.
Mean of Cloudiness, 0·59. Halo round the Moon on 24th.
Thunder storms occurred on the 12th, 13th, 27th, and 30th.
Sheet lightning and distant thunder on 1st, 3rd, 9th, 11th, 15th, 18th, 25th, and 29th.

Sum of the Atmospheric Current, in miles, resolved into the four Cardinal directions.

North.	West.	South.	East.
1363·51	1460·45	1876·87	1280·13.

Mean direction of Wind, S 19° W. Mean velocity 6·47 miles per hour.
Maximum velocity, 24·0 miles per hour, from 2 to 3 p.m. on 19th.
Most windy day, the 19th; mean velocity, 13·08 miles per hour.
Least windy day, the 25th; mean velocity, 2·45 " "
Most windy hour, 3 p.m.; Mean velocity, 9·98 miles per hour.
Least windy hour, 5 a.m.; Mean velocity, 4·32 " "
Mean diurnal variation, 5·66 miles.

The Mean Temperature of July, 1855, has been 1°·1 above the average of the last 16 years, and the 19th was the warmest day with two exceptions (July 12, 1845, and July 3, 1854) since the commencement of the Observations. The number of days on which Rain fell has been greater than in any previous July, but the quantity fallen has been 0·475 inch less than the average. The Mean Velocity of the Wind has been 2·11 miles per hour above the average of the last eight years, and the 19th was the most windy day in any July during the same period.

Comparative Table for July.

Year.	Temperature. Mean.	Dif. from Av'ge	Max. obs'vd	Min. obs'vd	Range	Rain. D's.	Inch.	Wind. M'n Direc	Mean Velocity in Miles.	
1840	65·8	—1·0	79·4	48·2	31·2	6	5·270	...		
1841	65·0	—1·8	86·3	43·2	43 1	10	8·150	...	0·27	lbs.
1842	64·7	—2·1	90·5	42·0	48·5	4	3·050	...	0·33	lbs.
1843	64·5	—2·3	86·1	40·2	45·9	8	4·605	...	0·44	lbs.
1844	66·0	—0·8	86·1	40·5	45·6	12	2·815	...	0·19	lbs.
1845	66·2	—0·6	94·6	45·6	49·0	7	2·195	...	0·30	lbs.
1846	68·0	+1·2	94·0	44·9	49·1	9	2·897	...	0·29	lbs.
1847	68·0	+1·2	87·5	43·8	43·7	8	3·355	...	0·19	lbs.
1848	65·5	—1·3	82·7	46·7	36·0	10	1·890	N 14 W	4·94	Miles.
1849	68·4	+1·6	89·1	51·0	38·1	4	3·415	S 5 W	3·52	Miles.
1850	68·9	+2·1	84·9	52·8	32·1	12	5·270	E 9 N	4·56	Miles.
1851	65·0	—1·8	82·7	52·1	30·6	12	3·625	W 30 N	4·13	Miles.
1852	66 8	0·0	90·1	49·5	40 6	8	4·025	W 45 N	3·33	Miles.
1853	65·6	—1·2	85·4	49·4	36·0	10	0·915	E 14 S	3·70	Miles.
1854	72·5	+5·7	93 6	53·0	40·6	9	4·805	W 32 S	4·26	Miles.
1855	67·9	+1·1	88·1	53·1	35·3	13	3·245	S 19 W	6·47	Miles.
									0·29	lbs.
M'n.	66·80		37·59	47·25	40·34	8.9	3·720		4·36	Miles.

Monthly Meteorological Register, St. Martin, Isle Jesus, Canada East.—July, 1855.

NINE MILES WEST OF MONTREAL.

BY CHARLES SMALLWOOD, M.D.

Latitude—45 deg. 32 min.. North. Longitude—73 deg. 36 min. West. Height above the Level of the Sea—118 Feet.

Day.	Barom. corrected and reduced to 32° Fahr.			Temp. of the Air.			Tension of Vapor.			Humidity of Air.			Direction of Wind.			Velocity in Miles per Hour.			Rain in	Weather, &c. A cloudy sky is represented by 10; A cloudless sky by 0.		
	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	Inches	6 A.M.	2 P.M.	10 P.M.
1	29·656	29·600	29·580	76·1	92·2	77·9	·727	·814	·787	·82	·59	·86	W S W	S W	S S W	11·98	5·00	4·25	...	Str. 4.	Cirr. 2.	Nimb.,dis. thun.
2	·590	·567	·801	74·2	81·0	68·3	691	607	552	83	58	81	S W b W	W S W	S W b W	5·26	12·12	8·02	0·343	Cum. Str. 9.	Do. 2.	Clear.
3	·998	·988	30·010	58·8	74·1	62·1	412	458	472	84	55	84	W	W b S	S W	10·28	6·50	0·62	...	Clear.	Clear.	Do.
4	·796	·718	29·685	69·2	78·5	66·0	513	670	584	72	71	91	S	S	S W	11·97	9·97	10·25	0·076	Cir. Cum. Str.	Cirr. Str. 8.	Cum. Str. 9.
5	·685	·814	·917	65·3	79·2	64·7	555	659	476	89	67	79	S W	S W	W b S	2·05	6·04	6·56	...	Clear. [4.	Do. 4.	Cir. Str. 4.
6	·954	·860	·853	68·1	82·7	63·8	496	597	516	72	55	89	S W b S	S W	S W b S	1·46	1·50	0·16	...	Cir. Str. 4.	Cir. Cum. Str. 6.	Str. 10.
7	·917	·946	30·000	60·2	65·1	54·3	416	381	349	79	61	81	N b E	N E	N E b N	5·37	5·20	1·52	...	Cir. Cum. Str.	Cum Str. 10.	Clear, ft. aurora.
8	30·073	30·040	30·060	52·1	76·6	60·1	326	515	441	81	58	84	N E b N	S W	S S W	5·00	2·47	0·87	...	Clear. [8.	Clear.	Cir. 2.
9	30·096	29·926	29·856	66·0	78·8	64·5	478	498	401	76	52	67	S S W	S S E	S b E	0·21	3·75	4·87	...	Do.	Cir. Str. 8.	Clear, ft. aurora.
10	29·706	·708	·784	66·3	74·7	72·3	516	648	688	80	78	82	S	W N W	W b S	8·16	4·98	0·66	Inapp.	Cirr. Str. 8.	Do. 4.	Cum. Str. 8.
11	·732	·695	·726	70·2	86·7	68·0	568	659	523	78	56	76	W b S	W S W	W S W	0·11	1·56	3·25	...	Clear.	Do. 4.	Clear.
12	·694	·646	·676	69·8	87·7	70·1	541	688	628	76	51	86	W S W	S W	W S W	1·23	4·20	2·60	...	Cirr. 2.	Cir. Cum. Str. 8.	Cir. Cum. Str. 4.
13	·604	·599	·612	65·1	64·0	61·0	555	584	521	89	89	97	S W b S	W	N W	0·10	7·50	1·32	0·430	Cir. Cum. Str.	Rain, thun. stor.	Str. 4.
14	·817	·836	·912	63·1	76·0	62·9	488	471	499	84	53	90	W b N	W	S S W	Calm	0·89	8·29	...	Clear. [4.	Clear.	Clear.
15	30·001	·982	·994	69·0	88·6	71·0	513	619	617	72	51	82	S S W	S	S	0·09	1·50	6·80	...	Cirr. 4.	Cir. 4.	Do.
16	29·986	·925	·915	74·2	90·1	75·9	620	814	739	75	59	86	S	S W b W	S W b S	5·27	5·93	8·37	...	Clear.	Cir. Cum. 2.	Do., v. f. Aur. B.
17	·833	·809	·853	77·1	75·2	71·6	648	814	715	71	90	95	W b S	W S W.	S W b W	0·01	10·71	2·20	0·770	Do.	Rain, thun. stor.	Cir. Str. 4.
18	·887	·823	·715	66·1	87·0	76·8	544	704	727	85	56	82	N W b N	S S E	S W b W	0·26	1·81	2·52	...	Do.	Cir. Cum. 2.	Str. 2.
19	·567	·509	·651	75·0	80·4	66·0	764	787	501	89	78	79	S W b W	W N W	N b W	6·44	10·30	6·77	0·499	Str. 8.	Cum. Str. 6, thu.	Str. 4.
20	·960	·934	30·001	60·0	76·0	60·7	871	517	467	71	59	89	N N E	N E b E	S E b E	9·11	4·81	0·07	...	Cirr. Cum. 4.	Cir. Cum. Str. 4.	Do. 6.
21	30·010	·983	30·001	54·9	74·4	59·2	373	485	452	87	52	89	E b N	N E b E	E	1·28	5·90	1·25	...	Do. 6.	Cir. Str. 2.	Clear.
22	30·051	·967	29·999	60·3	80·1	65·1	416	617	499	79	61	80	E	S S E	S S E	Calm	0·63	0·27	...	Clear.	Cir. Cum. Str. 4.	Cum. Str. 6.
23	29·958	·959	30·015	63·9	78·7	64·1	546	578	534	94	61	89	S S E	S	S	3·28	Calm	1·40	...	Str. 9.	Cir. Cum. 8.	Light Cum.*
24	·999	·911	29·879	66·2	82·7	67·8	574	659	593	89	61	89	S	S	S S E	Inap.	1·12	1·62	...	Very dense fog	Cum. Str. 9.	Cir. Cum. Str. 8.
25	·862	·826	·839	65·0	88·7	71·8	560	801	648	90	62	86	S S E	S W	S W b W	Calm	1·02	3·31	...	Fog.	Do. 4.	Str. 2.
26	·821	·811	·706	70·0	89·2	71·5	659	751	715	90	56	98	S W b W	S W	S W b S	Calm	1·79	0·15	...	Cirr Str. 8.	Cir. Cum. Str. 10	Rain.
27	·755	·724	·775	72·1	88·9	72·8	704	638	704	90	46	90	N W	S b W	S b W	Calm	0·15	0·30	0·233	Clear.	Cum. Str. 2.	Clear.
28	·690	·701	·714	69·9	90·1	73·[illegible]	[illegible]8	617	692	95	45	86	S b W	S b W	S	0·37	Calm	7·87	...	Cirr. 4.	Cir. Cum. Str. 8.	Cum. Str. 4.
29	·710	·740	·828	76·0	82·4	70· [illegible]1	763	692	76	71	95	S	W b S	W N W	2·25	3·38	2·15	...	Cir. Cum. Str.	Cum. Str. 8	Clear.
30	·832	·826	·734	69·2	82.0	70·2	[illegible]08	692	628	95	64	86	N W b W	N W b W	N W b N	Calm	0·62	0·19	...	Do. 4. [8.	Cir. Cum. Str. 4.	Str. 8.
31	·866	·838	·889	69·5	89·0	70·2	486	588	628	69	44	86	N N E	E	N E b N	0·15	6·32	Calm	...	Clear.	Cir. Str. 4.	Do. 4.

Barometer ....
- Highest, the 9th day ..... 30·096
- Lowest, the 19th day ..... 29·509
- Monthly Mean ..... 29·803
- " Range ..... 0·587

Thermometer
- Highest, the 28th day ..... 94°·8
- Lowest, the 8th day ..... 42°·2
- Monthly Mean ..... 72°·73
- " Range ..... 52°·6
- Mean Humidity ..... ·757

Greatest Intensity of the Sun's Rays ..... 127°·2

Lowest Point of Terrestrial Radiation ..... 40°·1

Rain fell on 7 days, amounting to 2·351 inches, raining 14 hours 5 min.; and was accompanied with thunder on four days.

Most prevalent Wind, S. Least prevalent Wind, S b E.

Most Windy Day, the 4th day; mean miles per hour, 10·72.

Least Windy Day, the 27th; mean miles per hour, 0.15.

Aurora Borealis visible on 3 nights. Might have been seen on 11 nights.

Lunar Halo on the 23d, diameter 38°·0.

Splendid Meteor on the 14th, at 9-10 p.m., passing from α Aquila to ϵ Serpentis; motion slow, and leaving a train like a rocket, noiseless.

The electrical state of the atmosphere has been marked by a moderate intensity of a positive character; and during the storms of the 15th and 17th days indicated a very high tension of negative electricity, amounting to 300° in terms of Volta's Electrometer No. 1.—0·770 inches of rain fell in 18 minutes during the storm of the 17th day.

Ozone.—The amount of Ozone has been in moderate quantity during the month.

* Lunar Halo, diameter 38°.

Monthly Meteorological Register, Quebec, Canada East, July, 1855.

BY LIEUT. A. NOBLE, R.A., F.R.A.S., AND MR. WM. D. C. CAMPBELL.

Latitude. 46 deg. 49·2 min. North; Longitude, 71 deg. 16 min. West. Elevation above the level of the Sea,—Feet.

Date.	Barometer corrected and reduced to 32 degrees, Fahr.				Temperature of Air.				Tension of Vapour.				Humid'y of Air.				Direction of Wind.			Velocity of Wind.			Rain in Inch.	Snow in Inch.	REMARKS.
	6 A.M.	2 P.M.	10 P.M.	MEAN.	6 A.M.	2 P.M.	10 P.M.	MEAN.	6 A.M.	2 P.M.	10 P.M.	MEAN.	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.			
					°	°	°	°																	
1	29·511	29·436	29·410	29.452	59·1	89·6	77·7	75·5	0·420	0·744	0·596	0·587	86	57	65	69	S S W	W b N	W S W	2·0	8·8	5·2	·145	...	
2	·495	·405	·507	·469	69·8	81·2	66·4	72·5	·621	·620	·495	·579	88	60	78	75	N N E	W S W	W S W	3·8	14·3	16·0	·178	...	
3	661	·819	·876	·785	66·4	70·2	62·0	66·2	·396	·336	·396	·374	63	47	74	61	W N W	W S W	N	12·4	13·4	2·0	...	...	
4	·836	·685	·534	·685	62·3	78·4	66·6	67·4	·387	·495	·552	·478	71	61	87	73	E N E	S S E	S S E	11·3	11·3	8·8	·488	...	
5	·608	·655	723	·662	67·1	72·9	67·4	69·1	·562	·467	·421	·483	87	60	64	70	W S W	W S W	W S W	10·0	12·4	3·8	...	...	
6	·797	·739	·706	·747	61·2	77·7	66·6	68·5	·429	·419	·427	·425	82	46	67	65	Calm.	W S W	E N E	0·0	7·2	13·4	...	...	
7	·698	·747	·815	·763	64·4	68·2	59·1	63·9	·418	·393	·311	·374	71	59	64	65	W S W	E N E	E N E	3·8	17·9	25·4	...	...	7th. At 2 p.m. circle round sun 35° in diameter.
8	·867	·864	·902	·878	55·7	68·1	58·7	60·8	·268	·274	·296	·279	62	41	61	55	N	E	N W	3·8	7·2	3·8	...	...	
9	·978	·853	·724	·852	56·4	75·1	66·7	66·1	·326	·326	·372	·341	64	38	58	53	S	E	E	5·2	6·2	3·8	...	...	9th. At 10 p.m. bright Auroral arch and Streamers.
10	·621	·581	·529	·577	61·3	73·9	64·9	66·7	·407	·552	·350	·436	77	68	92	79	Calm.	S S W	Calm.	0·0	6·2	0·0	...	...	
11	·519	·553	·622	·576	61·0	72·2	64·8	66·0	·468	·481	·534	·478	90	56	89	78	N W	E N E	W	2·0	11·3	8·0	...	...	
12	·562	·603	·503	·523	66·8	81·0	70·9	72·9	·511	·420	·471	·467	80	42	64	62	S S W	W S W	S W	8·6	8·0	2·0	·066	...	
13	·499	·355	·395	·416	66·8	71·5	60·2	66·2	·467	·602	·446	·505	78	81	87	80	Calm.	Calm.	N W	0·0	0·0	8·8	1·346	...	
14	·603	·688	·799	·697	58·0	72·0	61·1	63·7	·330	·340	·491	·357	70	63	77	70	W N W	N W	Calm.	8·8	7·2	0·0	...	...	
15	·929	·908	·891	·909	58·4	80·0	71·2	69·9	·386	·446	·506	·446	81	46	68	65	Calm.	S	W	0·0	3·8	3·8	...	...	
16	·904	·799	·705	·803	69·2	82·0	77·0	76·0	·497	·612	·696	·602	72	58	77	69	S	W	W	5·2	12·4	7·2	...	...	
17	·761	·516	·655	·667	74·8	68·1	70·9	71·3	·685	·633	·666	·661	82	95	91	89	W S W	W	N W	13·4	7 2	5·2	·686	...	
18	·754	·676	·485	·638	64·7	75·2	70·0	70·0	·429	·416	·589	·478	73	49	83	68	E N E	S	S	15·2	2·0	2·6	·190	...	
19	·313	·312	·580	·402	72·9	76·9	63·5	71·1	·698	·734	·376	·603	89	82	66	79	S W	W N W	N W	13·9	8·8	7·2	·718	...	
20	·727	·793	·853	·791	58·6	69·3	59·7	62·5	·431	·226	·293	·317	90	33	59	61	N W	N W	N N W	13·4	14·7	8·0	...	...	17th. Heavy squall, wind varying in velocity from 50 to 30 miles per hour.
21	·895	·831	·724	·817	56·4	71·6	62·5	63·5	·268	·329	·316	·304	60	43	57	53	W N W	E	W N W	8·0	8·0	10·0	...	...	
22	·910	·841	·800	·850	55·4	75·5	66·9	66·0	·394	·270	·401	·355	92	32	62	62	S S E	N W	S W	7·2	8·0	2·0	...	...	19th. Brilliant Aurora.
23	·814	·778	·781	·791	68·9	72·2	66·5	69·2	·473	·457	·519	·486	69	60	83	71	N W	N N W	N W	2·0	10·0	2·0	...	...	
24	·822	·744	·692	·753	64·8	78·5	69·9	71·1	·476	·469	·536	·494	80	60	76	69	N N W	N W	S	6·2	6·2	11·3	...	...	
25	·677	·636	·597	·620	64·8	82·7	73·2	73·6	·520	·560	·610	·563	87	52	78	72	N N W	N W	W S W	5 1	8·0	5·2	·039	...	
26	·672	·624	·556	·617	66·5	74·6	69·5	70·2	·358	·486	·430	·408	57	53	62	57	E	N E	E N E	8·0	5·2	2·0	inap.	...	
27	·568	·591	·608	·589	64·7	73·6	64·6	67·6	·414	·410	·435	·420	70	51	74	65	E N E	E	E	7·2	10·0	8·0	...	...	
28	·597	·562	·562	·574	64·0	82·1	72·9	73·0	·492	·668	·682	·614	85	63	87	78	E N E	S W	Calm.	3·8	3·8	0·0	·135	...	
29	·583	·580	·585	·583	68·0	71·4	70·4	69·9	·504	·668	·691	·621	76	90	97	88	S	E	E S E	3·8	·	9·3	·396	...	
30	·631	·664	·671	·655	69 0	76·8	70·0	71·9	·564	·497	·527	·529	82	56	75	71	Calm.	E	E	0·0	5·2	8·0	...	...	
31	·693	·692	·765	·717	66·3	81·3	70·0	72·5	·498	·388	·479	·455	79	38	68	62	N	E	N E	8·0	10·3	11·3	...	...	
M	29·695	29·664	29·660	29·6728	63·99	75·45	67·15	68·86	0·455	0·472	0·478	0·468	77	56	74	69				6·20	8·37	6·56	4·327		

Maximum Barometer, 6 a.m. on the 9th ..... 29·978
Minimum Barometer, 2 p.m. on the 19th ..... ·312
Monthly Range ..... ·666
Monthly Mean ..... 29·6728
Maximum Thermometer on the 1st ..... 90°·3
Minimum Thermometer on the 21st ..... 51·9
Monthly Range ..... 38·4
Mean Maximum Thermometer ..... 80·02
Mean Minimum Thermometer ..... 59·98
Mean Daily Range 20 04
Mean Monthly Temperature ..... 68·86

Greatest Daily Range of Thermometer on 1st ..... 31°·2
Least Daily Range of Thermometer on 29th ..... 8°·2
Warmest Day, 16th. Mean Temperature ..... 76·0
Coldest Day, 8th. Mean Temperature ..... 60·8
Climatic Difference ..... 15·2
Possible to see Aurora on 17 Nights.
Aurora visible on 14 Nights.
Total quantity of Rain, 4·327 inches.
Rain fell on 12 days.
No Snow fell.